



United Nations Environment Programme



Distr.
RESTRICTED

UNEP/WG.118/3
12 March 1985

Original: ENGLISH

Third Meeting of the Working Group for
Scientific and Technical Co-operation
for MED POL

Athens, 27-31 May 1985



PROGRESS REPORT ON THE IMPLEMENTATION OF THE LONG-TERM PROGRAMME

FOR POLLUTION MONITORING AND RESEARCH (MED POL - PHASE II)

(1983 - 1985)

In co-operation with:



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
WORLD HEALTH ORGANIZATION
UNITED NATIONS EDUCATIONAL SCIENTIFIC AND CULTURAL ORGANIZATION
INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
WORLD METEOROLOGICAL ORGANIZATION
INTERNATIONAL MARINE RADIOACTIVITY LABORATORY OF THE INTERNATIONAL ATOMIC ENERGY
AGENCY

C O N T E N T S

	<u>Paragraphs</u>
INTRODUCTION	1 - 5
MONITORING	6 - 42
Monitoring of sources of pollution	12 - 24
Monitoring of coastal waters, including estuaries	25 - 27
Monitoring of reference areas	28 - 29
Monitoring of transport of pollutants through atmosphere	30 - 34
Sampling and analytical techniques	35 - 37
Data analysis and dissemination	38 - 42
RESEARCH AND STUDY TOPICS	43 - 52
ASSISTANCE	53 - 63
CO-ORDINATION	64 - 71
ACTIVITIES PLANNED FOR 1985	72 - 73
BUDGETARY CONSIDERATIONS	74 - 76
SUMMARY AND CONCLUSIONS	77 - 78
Annex I: Status of national monitoring programmes and agreements (MED POL - PHASE II)	
Annex II: National research centres and scientists designated as participants in MED POL - PHASE II monitoring programme	
Annex III: Parameters, areas and stations covered by national monitoring programmes	
Annex IV: Reports received during 1983 and 1984 on monitoring activities	
Annex V: Ongoing MED POL research projects	
Annex VI: National contributions to the jellyfish programme	
Annex VII: Trainees and fellowships	
Annex VIII: Technical assistance by visit of staff (secretariat and co-operating agencies) and consultants/experts	
Annex IX: Maintenance services provided to MED POL participants	
Annex X: Equipment provided to MED POL participants	
Annex XI: Expenditures and financial commitments relevant to MED POL	

INTRODUCTION

1. The present document was prepared for the third meeting of the Working Group by the secretariat, in close collaboration with the MED POL co-operating agencies (FAO, WHO, IOC, UNESCO, WMO and IAEA). The document contains information on the progress achieved in the implementation of the MED POL since the last meeting of the Working Group (Athens, 21-25 November 1983). The layout of the document follows the relevant structure of the MED POL - PHASE II programme description, as adopted by the second meeting of the Contracting Parties (UNEP/IG.23/11).

2. The Working Group is invited to review the contents of the document and to evaluate the achieved results, to advise UNEP on technical and policy matters, and to prepare recommendations for submission to the forthcoming fourth meeting of the Contracting Parties (September, 1985).

3. Since the last meeting of the Working Group, MED POL continued to develop taking into account its general objectives and principles approved by the Contracting Parties and the specific advice received from the previous meetings of the Working Group.

4. By the end of 1984 about 70 collaborating MED POL research centres have been involved in the monitoring and research activities, 9 scientific meetings have been organised or sponsored by UNEP and the co-operating agencies and US\$ 1,085,700 have been provided or committed in terms of assistance to participants in the programme.

5. Further efforts have been made by the secretariat to extend the programme to all Contracting Parties. As a result of these efforts national monitoring programmes have been submitted by all but five States and 102 research contracts have been signed or are being negotiated with research centres in 16 States and in the EEC.

MONITORING

6. By the end of 1984 the secretariat received descriptions of ten national monitoring programmes from the MED POL National Co-ordinators. A formal agreement on these programmes was reached (and signed) between the secretariat and the relevant national authorities in six States. According to the information received by the secretariat monitoring based on these programmes is carried out in eight States. The status of national monitoring programmes is summarized in Annex I. The national institutions designated by their MED POL Co-ordinators as participants in the monitoring programme are listed in Annex II.

7. A number of National Co-ordinators did not provide the secretariat with either a proposal for their national monitoring programmes or with the complementary information requested by the secretariat and thus agreements on monitoring activities could not be established with all Contracting Parties.

8. The main difficulties encountered in efforts to involve all Contracting Parties in the monitoring programme are:

- late designation of the National Co-ordinators for MED POL in several States;

- lack of either funds or of administrative arrangements at national level for institutions to be involved in monitoring activities; and,
- in a few cases, the national monitoring programmes submitted to UNEP did not follow the agreed guidelines or were submitted in incomplete form, delaying the processing of their contents and the establishment of signed agreements.

9. These difficulties resulted in delays in the progress of the programme and, more important, in the provision of assistance under the coverage of the agreements between UNEP and the relevant national authorities. Thus, assistance has been provided by the secretariat only to research centres in the six States where agreements have been signed by the two sides (see details in paragraphs 53 - 63).

10. A review of parameters as well as of the total number and location of sampling stations in the coastal waters and in the reference areas covered by the received national monitoring programmes is given in Annex III.

11. Only a few reports have been received by the secretariat from the MED POL National Co-ordinators on the results of the national monitoring programmes (Annex IV) although the substance and format of these reports have been agreed by the previous meetings (UNEP/IG.23/11, UNEP/WG.62/7 and UNEP/WG.91/12). The following paragraphs contain a short review of the received reports, following the layout of approved MED POL - PHASE II (UNEP/IG.23/11).

Monitoring of sources of pollution

Type and amount of pollutants discharged directly into the coastal waters from land-based (coastal) sources

12. No inventories of the major sources of pollution (expected according to Art. 13.2 of the LBS protocol) have been received.
13. No reports on the authorizations granted for the discharges of pollutants from land-based sources (expected according to Art. 6 and 13a of the LBS protocol) have been received.
14. No reports on the quantities of pollutants discharged from land-based sources (expected according to Art. 13c of the LBS protocol) have been received.
15. Reports providing data on the monitoring of some selected effluents (expected according to Art. 13b of the LBS protocol) have been received only from Cyprus and Yugoslavia.
16. An assessment of the overall inputs of pollutants from land-based sources cannot be made on the basis of the few data supplied so far.

Type and amount of pollutants dumped directly into the sea

17. Reports on the issue of special permits granted (expected according to Art. 5 and 7 of the Dumping protocol) have been received only from Italy.

18. No reports on the issue of general permits granted (expected according to Art. 6 and 7 of the Dumping protocol) have been received.

19. Reports regarding the actual amounts, nature of the wastes, or other matter dumped under each of the special and general permits (expected according to Art. 7 of the Dumping protocol) have been received only from France and Italy.

20. An assessment of the overall inputs of pollutants resulting from dumping operations cannot be made on the basis of the data supplied through these reports. For more detailed analysis see document UNEP/WG.118/8.

Type and amount of pollutants dumped in emergency or released accidentally into the sea

21. No reports on the dumping of pollutants in emergency or released accidentally into the sea (expected according to Art. 8 and 9 of the Dumping protocol) have been received.

22. No reports on the type and nature of the spillages of pollutants at sea (expected according to Articles 8 and 9 of the Emergency Protocol) have been received. However, reports on oil spills have been received, through the Regional Oil Combating Centre (ROCC), from Malta and Tunisia.

23. An assessment of the overall inputs of pollutants through discharges in emergency situations or released accidentally into the Mediterranean cannot be made on the basis of the data supplied by the end of 1984.

Type and amount of selected substances reaching the sea directly through natural processes from land-based (coastal) or maritime sources

24. No new information on this subject was made available to the secretariat. The information collected in 1979 through MED X (UNEP Regional Seas Reports and Studies No. 32) would require extensive revision and updating. The only more recent assessment of natural inputs from land-based and maritime sources is available for mercury (UNEP/WG.118/5 and UNEP/WG.118/Inf.19).

Monitoring of coastal waters, including estuaries

25. Forms for reporting the results of the monitoring of coastal waters, including estuaries, were distributed to all National Co-ordinators for MED POL at the end of 1983.

26. Reports on the monitoring of coastal waters and estuaries during 1983 have been received from Cyprus, France, Israel, Malta, Spain and Yugoslavia (see Annex IV).

27. Data submitted with these reports are being entered into the data bank of the Co-ordinating Unit of the MAP. However, a general assessment of pollution levels cannot be made for the period covered by MED POL - PHASE II with the few results received through these reports.

Monitoring of reference areas (open sea)

28. Reports with results obtained from monitoring of reference areas have been received only from Yugoslavia.

29. An assessment of the levels of pollution in the reference areas of the Mediterranean Sea cannot be made with the information available.

Monitoring of the transport of pollutants through the atmosphere

30. Following the decision of the Contracting Parties to consider the first phase of this monitoring as research (UNEP/IG.23/11, paragraph 41), the implementation of this activity has been included under research (activity "L") (see paragraph 51).

31. At the request of UNEP, the GESAMP Working Group No. 14 on Interchange of Pollutants between the Atmosphere and the Oceans defined the transport processes towards and into the Mediterranean Sea, reviewed the relevant scientific literature and assessed the atmospheric pathways and fluxes of pollutants important for the Mediterranean Sea (UNEP/WG.118/Inf.4).

32. Based on GESAMP's recommendations, an attempt is being made to build up a small monitoring network. Contacts continued, through WMO, with national meteorological services in order to assess the possibility of using for this purpose the existing background pollution monitoring stations (BAPMON).

33. As part of these efforts two BAPMON stations, in Carpentras (France) and Ivan Sedlo (Yugoslavia), have begun to sample aerosols and wet precipitation. Two more stations, in Messina (Italy) and Methoni (Greece), are being established for the same purpose. In addition two national research centres, Centre pour les Faibles Radioactivités (France) and Middle East Technical University (Turkey), have agreed to carry out onshore and onboard sampling. Routine analyses of samples are being carried out by these centres and the IAEA Seibersdorf and Vienna Laboratories (see UNEP/WG.118/Inf.5 for further information).

34. An assessment of the inputs of pollutants into the Mediterranean Sea through the atmosphere cannot be made with the preliminary data available through this network and the analysis prepared by GESAMP (see paragraph 31) remains for the time being the most up to date information.

SAMPLING AND ANALYTICAL TECHNIQUES

35. The present status of sampling and analytical techniques used in MED POL is reviewed in document UNEP/WG.118/Inf.9 (see also paragraph 46).

36. Efforts of the secretariat continued to include all national research centres in mandatory and continuous intercalibration of their sampling and analytical procedures. The relevant standards and reference materials are regularly distributed from IAEA and the results of the intercalibration are periodically reviewed between IAEA and the secretariat. Whenever necessary, corrective measures are taken, including visits of experts and training of national staff. For more information on the subject see document UNEP/WG.118/Inf.7.

37. In addition, several testing and intercalibration exercises were organized for participants selected in consultation with the MED POL National Co-ordinators. For more details on this activity see paragraph 46.

DATA ANALYSIS AND DISSEMINATION

38. Forms for reporting the results of the monitoring activities were distributed at the end of 1983 to all National Co-ordinators for MED POL with the request of submitting data reports before the end of April 1984, as agreed by the second meeting of the Working Group. A reminder was sent, at the end of April 1984, to those National Co-ordinators which did not submit a report by that time. As a result, by the end of 1984, reports on certain activities carried out during 1983 were received from Cyprus, France, Israel, Italy, Malta, Spain and Yugoslavia (see paragraphs 15, 19 and 26).

39. Reporting forms for data from monitoring of coastal waters and estuaries were developed, taking into account the requirements of the Convention, its protocols and specifically the various MED POL activities. Reporting forms required in accordance with Articles 6 and 13 of the LBS protocol and reporting forms for data from monitoring of urban and industrial effluents are being developed and a first draft will be presented at the Meeting of Experts for the Technical Implementation of the LBS protocol.

40. MED POL data are being processed and stored at the computer facilities of the Co-ordinating Unit for the Mediterranean Action Plan in Athens. The inventory of the MED POL data base consists of Phase I and Phase II data. As an example a set of printouts produced by processing Phase I data, are presented as document UNEP/WG.118/Inf.8. The validation (quality control) of data reported during Phase II has been completed and the printouts will be sent to the relevant institutes for clearance.

41. Using the data obtained through MED POL as well as information from other sources, work continued on the assessment of the present state of pollution of the Mediterranean Sea by specific pollutants. In addition to the previously prepared assessments on mercury (UNEP/WG.118/5) and on shellfish, shellfish-growing and recreational waters (UNEP/WG.118/6), the assessment of petroleum hydrocarbons has been prepared in co-operation with IOC (UNEP/WG.118/7). All three of these documents are submitted to the Working Group for review and evaluation. The first two documents have been preliminarily reviewed by the second meeting of the Working Group but are resubmitted (as documents UNEP/WG.118/5 and UNEP/WG.118/6) to this meeting for a detailed analysis.

42. Other documents relevant to MED POL that have been or are being prepared since the last meeting of the Working Group are:

- Directory of Mediterranean marine centers (third edition in print).
- Bibliography on the pollution of the Mediterranean Sea (second edition in print).
- Proceedings of the VI ICSEM/IOC/UNEP workshop on pollution of the Mediterranean Sea (Cannes, 2 - 4 December 1982) (printed and distributed).
- Proceedings of the workshop on jellyfish blooms in the Mediterranean, (Athens, 31 October - 4 November 1983) (see document UNEP/WG.118/Inf.3).
- National legislation for the prevention and control of pollution from Land Based Sources (second edition in preparation).
- Individual scientific reports of participants in MED POL PHASE I (in preparation).
- Individual scientific reports of participants in MED POL PHASE II (in preparation).
- Scientific/administrative evaluation of MED POL - PHASE I (in preparation).
- Proceedings of the VII ICSEM/IOC/UNEP workshop on pollution of the Mediterranean Sea (Luzern, 11-13 October 1984) (in preparation).
- Legal, administrative and technical arrangements for the protection of the Mediterranean Sea from petroleum hydrocarbon pollution (see document UNEP/WG.118/Inf.10).
- Proceedings of the meeting on the biogeochemical cycle of mercury in the Mediterranean (Siena, 27-31 August 1984) (in preparation).
- Proceedings of the meeting on the toxicity and bioaccumulation of selected substances in marine organisms (Rovinj, 5-9 November 1984) (in preparation).
- Selected reference methods for marine pollution studies (see document UNEP/WG.118/Inf.9).

RESEARCH AND STUDY TOPICS

43. As a follow-up to the decisions of the second meeting of the Working Group, the secretariat contacted all scientists already participating in the research activities of MED POL and other Mediterranean scientists soliciting new research proposals for 1984. The procedures followed by the secretariat and the relevant MED POL co-operating agencies in selection and funding of projects were those endorsed by the second meeting of the Working Group (UNEP/WG.91/12).

44. At the end of 1984 there were 102 ongoing research projects carried out by 62 research centres in 16 Mediterranean States, with US \$ 627,650 provided to them as assistance from the MAP (since 1982). Annex V lists all the ongoing research projects and indicates the assistance provided to them as well as the co-operating agency guiding their implementation.

45. A short review of projects implemented under various research activities is given in paragraphs 46 - 52. As recommended by the second meeting of the Working Group, no projects were implemented in connection with activity B (Development of reporting formats required according to the Dumping, Emergency and Land-Based Sources Protocols), activity C (Formulation of the scientific rationale for Mediterranean Environmental Quality Criteria) and activity E (Guidelines and criteria for the application of the Land-Based Sources Protocol). Some of the funds allocated to these activities were used for the preparation of the relevant documentation for the meeting of experts on the technical implementation of the LBS Protocol (Athens, 1985) (see UNEP/WG.118/Inf.11 and UNEP/WG.118/Inf.12).

46. Activity A (Development and testing of sampling and analytical techniques for monitoring of marine pollutants). Work continued on the evaluation of the main factors affecting the determination of the levels of selected pollutants in the monitoring programme of MED POL and on refining the analytical and sampling techniques used in MED POL (see paragraph 35 and document UNEP/WG.118/Inf.9). In this context laboratory exercises had been organized to test the proposed methods, including their intercalibration, with standards and reference samples distributed by IAEA (ILMR). The results of the laboratory exercise were reviewed and analysed at seven expert consultations, specifically dealing with the microbiological quality of coastal waters, chemical contaminants in marine organisms and petroleum hydrocarbons on beaches and surface waters. For detailed reports on these meetings and their results see documents UNEP/WG.118/Inf.13-18 and UNEP/WG.118/Inf.21.

47. Activity D (Epidemiological studies related to environmental quality criteria). Work on the correlation between coastal recreational water quality and the health of swimmers continued through projects listed in paragraph 22 of UNEP/WG.91/4/Rev.1. In addition, research on enteric viruses in marine environment and neurotoxins in shellfish was initiated. The evaluation of methylmercury intake through seafood by epidemiological studies (see UNEP/WG.91/4/Rev.1, paragraphs 23-25), currently being implemented in Yugoslavia, is being extended to Greece, Italy and Egypt. A WHO/FAO/UNEP meeting to evaluate the first results of this project was convened in Zagreb (17-21 September 1984) (for report of the meeting see UNEP/WG.118/Inf.17). The meeting reviewed the methodological problems of the project in order to assure its implementation on a wider Mediterranean basis.

48. Activity F (Research on oceanographic processes). Work on the analysis of Mediterranean oceanographic processes and on the development of the relevant models is continuing through projects being implemented in Greece, Italy, Turkey and Yugoslavia. IOC is at present gathering relevant information on additional ongoing work in order to harmonize the national and international efforts in this field of research.

49. Activity G (Research on the toxicity, persistence, bioaccumulation, carcinogenicity and mutagenicity), activity H (Eutrophication and concomittant plankton blooms), activity I (Pollution-induced ecosystems modifications) and activity J (Effects of thermal discharges on coastal organisms and ecosystems). A large number of projects is being implemented in Algeria, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Malta, Tunisia, Turkey and Yugoslavia. Data is collected on acute and sublethal effects of various pollutants on various marine organisms as well as on their carcinogenicity and mutagenicity. Also behavioural studies are carried out as well as studies on the bioaccumulation of selected pollutants and their distribution in the various organs of fish. A FAO/UNEP meeting of experts on the toxicity and bioaccumulation of selected substances in marine organisms has been organized in Rovinj (5-9 November 1984) (for report of the meeting see UNEP/WG.118/Inf.18) within the framework of activity G, to review the first results achieved, the methodology used and discuss needs for future work. Work related to the eutrophication of coastal areas is also carried out, and UNESCO is preparing guidelines for the assessment of receiving capacity for eutrophication substances and for the monitoring of long-term trends of eutrophication. Studies of ecosystem modifications in areas influenced by pollutants are being carried out in several Mediterranean areas. Two case studies are being implemented in Italy and Cyprus on the effects of thermal effluents on the local littoral, benthic and fish communities. In this connection, the work of the GESAMP Working Group on Biological Effects of Thermal Discharges in the Marine Environment is being taken into account to avoid duplication of work and make good use of the results achieved (see UNEP Regional Seas Reports and Studies No. 45).

50. Activity K (Biogeochemical cycles of specific pollutants). In line with the objectives listed in paragraphs 42 - 43 of UNEP/WG.91/4/Rev.1 several projects are being implemented. In addition, four projects on the survival of microbial pathogens and indicator organisms under different environmental conditions are in progress. A FAO/WHO/IOC/IAEA/UNEP workshop was held in Siena, (27-31 August 1984), on the biogeochemical cycle of mercury in the Mediterranean, which provided an opportunity to review the current state of knowledge in this field and to identify further research needs (for report of the meeting see UNEP/WG.118/Inf.19).

51. Activity L (Pollutant-transfer processes). Projects are being implemented in France, Italy, Greece and Yugoslavia. In addition to the projects started in 1983 (see UNEP/WG.91/4/Rev.1), work on the transport of heavy metals into the Mediterranean Sea as well as a preliminary study of potential long-range cadmium transport from major identified sources in Europe into the Mediterranean are being carried out in Italy and Yugoslavia. For more details on this activity see paragraphs 30-34.

52. Following the approval by the Contracting Parties in April 1984 (see UNEP/IG.49/5, appendix 4 and UNEP/IG.49/Inf.5), the jellyfish programme has made good progress. At the workshop on jellyfish blooms in the Mediterranean (Athens, 31 October - 4 November 1983), sixty-four experts participated and reviewed the twenty-seven papers presented to the meeting (see document UNEP/WG.103/1). In December 1983 the secretariat invited all MED POL National Co-ordinators to expand their national monitoring programmes with regular observations of jellyfish occurrence and to encourage scientists to submit relevant research proposals. The MED POL National Co-ordinators of France, Greece, Italy, Malta, Spain and Yugoslavia expressed interest in the jellyfish programme and a small meeting of experts (Athens, 6-7 February 1984) formulated the jellyfish programme document (see document UNEP/IG.49/Inf.5). The document was later endorsed by the extraordinary meeting of the Contracting Parties (UNEP/IG.49/5) and served as the basis for the formulation of the research and monitoring activities related to jellyfish including a training programme coordinated by the CIMAM Centre in Trieste. The research projects relevant to the jellyfish programme are listed in Annex V and the summaries of the proposed national contributions to the programme are contained in Annex VI.

ASSISTANCE

53. Assistance has been provided to the MED POL participants in the form of individual and collective training, quality control programme (intercalibration), common maintenance service, supplies of equipment, products and services.

Training

54. Individual training was organised by the secretariat and the co-operating agencies for a number of scientists participating in the programme, under the coverage of the monitoring and research agreements. Fellowships were also provided to a number of scientists for their participation in meetings, seminars, workshops, etc., organized, co-sponsored or supported through the MED POL programme. The list of those who benefited from MAP support is given in Annex VII.

Technical assistance

55. Assistance was provided to the Government of Algeria through the organisation of a mission to assess the state of pollution in the country and to advice on the establishment of a monitoring network for air, water and soil pollution.

56. Assistance was also provided to several research institutions and to MED POL National Co-ordinators through visits of staff of the secretariat, staff of the co-operating agencies and consultants/experts sponsored through MAP. Most of these visits were undertaken in order to discuss the formulation of national monitoring programmes and the involvement of national research centres in their implementation. For details see Annex VIII.

Quality control of data

57. The International Laboratory for Marine Radioactivity (ILMR) of IAEA has been organizing since 1975, the intercalibration relevant to the monitoring of selected metals and chlorinated hydrocarbons (see document UNEP/WG.118/Inf.7). In the period covered by this report the following standards and reference samples have been prepared by ILMR and the corresponding intercalibration exercises have been launched with the participation of research centres identified in consultation with National Co-ordinators for MED POL:

- organohalogens (DDT, DDE, DDD and PCBs) in sediments;
- organohalogens (DDT, DDE, DDD and PCBs) in mussels;
- heavy metals (Hg, Cd, Pb, Zn and Cu) in sediments; and
- heavy metals (Hg, Cd, Pb, Zn and Cu) in mussels.

58. ILMR has also prepared reference samples (the first two being ready for distribution) for the determination of:

- organohalogens (DDT, DDE, DDD and PCBs) in shrimps;
- heavy metals (Hg, Cd, Pb, Zn and Cu) in shrimps;
- organohalogens (DDT, DDE, DDD and PCBs) in fish;
- heavy metals (Hg, Cd, Pb, Zn and Cu) in fish.

59. In order to improve the quality of data an FAO/IAEA/UNEP expert consultation took place in Rome (4-8 June 1984) to discuss and clarify the methodological questions related to the determination of chemical contaminants in marine organisms (for details see document UNEP/WG.118/Inf.14).

60. Several experts participating in MED POL took part in the global intercalibration exercise of analytical methods for petroleum hydrocarbons in marine organisms organised by the Bermuda Biological Station, IOC and ICES with support of MED POL. The results of the exercise are analysed in document UNEP/WG.118/Inf.20. In addition, an intercalibration exercise for MED POL participants has been organised by IOC in co-operation with UNEP and CSIC in Barcelona, 11-17 November 1984 (see document UNEP/WG.118/Inf.16).

61. Intercalibration of microbiological and related techniques has been organized at regional and national levels by WHO in co-operation with the secretariat. Each exercise is held in a different laboratory and participants include scientists from the host country, from other Mediterranean laboratories and from non-Mediterranean laboratories. Standard reference methods are used, and the exercises are combined with consultation meetings to review results. The first exercise was held in Barcelona (in French) 7-11 November 1983, the second in Athens (in English) 25-29 June 1984, and the third in Tunis (in French) 12-16 November 1984. For details see document UNEP/WG.118/Inf.13, UNEP/WG.118/Inf.15 and UNEP/WG.118/Inf.21).

Common maintenance service

62. Maintenance services, which were organised during the pilot phase of MED POL by UNEP in collaboration with IAEA's International Laboratory for Marine Radioactivity (ILMR) in Monaco, continued to be provided to the research centres in various countries. In addition to the regular and emergency service visits carried out by the maintenance engineer from ILMR (summarized in Annex IX), maintenance services from Carlo Erba (Milano) were arranged at the request of the Tunisian authorities to repair one instrument which could not be serviced through ILMR.

Supply of equipment and materials

63. Major equipment supplied or agreed to be supplied through FAO, WHO and IAEA, under the coverage of signed monitoring and research agreements, to the research centres participating in MED POL is shown in Annex X. In addition, small parts, accessories and expendables were supplied to collaborating MED POL institutes, mainly through the ILMR.

CO-ORDINATION

64. Based on the decisions of the Contracting Parties or of their Bureau, as appropriate, and the guidance provided by the meetings of the Working Group, the overall co-ordination and organization of MED POL continued to be ensured by UNEP, through the Co-ordinating Unit for the Mediterranean Action Plan (MAP), as an integral part of MAP and UNEP's Regional Seas Programme.

65. The active support of and close collaboration with the co-operating agencies (FAO, WHO, IOC, UNESCO, WMO and IAEA) remained an important factor contributing very significantly to the implementation of MED POL. In addition to the frequent ad hoc contacts between the secretariat and the co-operating agencies, two meetings of the Inter-Agency Advisory Committee (IAAC) for MED POL took place in order to ensure harmonious co-operation in the implementation of MED POL:

- XVI Meeting of IAAC (Athens, 21-25 November 1983): reviewed the activities of MED POL during 1983 and provided guidance to Co-operating Agencies on the implementation of research activities and services;
- XVII Meeting of IAAC (Athens, 9-13 April 1984): reviewed the activities of MED POL particularly with regard to the research proposals received for 1984.

66. The monitoring activities of MED POL are co-ordinated by the secretariat directly through direct contacts with the MED POL National Co-ordinators and with the participation of the relevant co-operating agencies.

67. While the overall co-ordination of MED POL research activities rests with the secretariat, the relevant co-operating agencies provide the guidance for research projects through direct contacts with the national research centres.

68. The report of the second meeting of the Working Group (UNEP/WG.91/12), including its recommendations, was submitted to the extraordinary meeting of the Contracting Parties (Athens, 10-13 April 1984) and the recommendations of the Working Group were endorsed by the Contracting Parties (UNEP/IG.49/5).

69. The jellyfish programme, formulated by a consultation meeting (see paragraph 52) was submitted as document UNEP/IG.49/Inf.5 to the same meeting of Contracting Parties. The meeting endorsed the proposed programme (UNEP/IG.49/5) and instructed the secretariat to submit to the Bureau a detailed workplan and budget. The Bureau reviewed the workplan and budget of the proposed programme and endorsed its implementation (Athens, 23 June 1984).

70. A meeting of the ICSEM/IOC/UNEP Advisory Panel took place (Monaco, 2-6 July 1984) to review and select the papers submitted for the VII Workshop on Pollution of the Mediterranean Sea (held in Luzern, 11-13 October 1984).

71. In order to benefit from other activities carried out in the framework of UNEP's Regional Seas Programme and other regional programmes (such as the Oslo/Paris Commission) relevant to MED POL, the staff of the Co-ordinating Unit for the MAP attended a number of scientific and technical meetings organized by these programmes.

ACTIVITIES PLANNED FOR 1985

72. The following activities, recommended by the second meeting of the Working Group (UNEP/WG.91/12) and endorsed by the extraordinary meeting of the Contracting Parties (UNEP/IG.49/5), are planned for 1985:

- (a) Prepare and convene a meeting of the Working Group for Scientific and Technical Co-operation (December 1985 or early 1986) in order to review the progress of MED POL and to receive guidance on the implementation of the relevant decisions of the forthcoming meeting of the Contracting Parties (September 1985).
- (b) Continue close co-operation with the MED POL National Co-ordinators in order to:
 - increase contributions to MED POL through the national monitoring programmes and through participation of national research centres in the research programme;
 - facilitate contacts with national research centres which are designated as participants in MED POL and assist in provision of equipment, training and fellowships to these research centres.
- (c) Continue the implementation of the twelve research and study topics, including the jellyfish programme, along the lines approved by previous meetings of the Contracting Parties and the Working Group, including the extension of ongoing research agreements and the signing of new agreements, as appropriate.
- (d) Continue the close collaboration with the co-operating agencies on all relevant aspects of MED POL in order to benefit from their experience, expertise and contributions, and to ensure full harmonization with projects of a similar nature being carried out as part of their regular programmes.

- (e) Continue to support the national research centres through the common maintenance service of laboratory instruments, provision of reference methods for marine pollution studies, provision of reference materials and analytical standards and involvement in intercalibration.
- (f) Complete the analysis of the data collected during the MED POL - PHASE I and finalize the relevant publications, in particular the individual scientific reports of participants in MED POL - PHASE I and the overall scientific/administrative evaluation of MED POL - PHASE I.
- (g) Strengthen the computerized MED POL data bank by processing the data reported to the secretariat and prepare periodic data profiles of specific pollutants.
- (h) Continue to develop and test additional reference methods for marine pollution studies, and prepare new analytical standards and reference materials relevant to parameters to be monitored through MED POL.
- (i) Convene a meeting on the correlation between the quality of coastal recreational waters and the health effects in order to evaluate the results of relevant ongoing projects (research activity "D"), to discuss methodological problems and to prepare guidelines for epidemiological studies.
- (j) Prepare, as a result of research activity "L", and initiate the implementation of a pilot project which will provide the basis for monitoring the transport of pollutants into the Mediterranean Sea through the atmosphere.
- (k) Convene a meeting to analyse the results obtained through the jellyfish programme.
- (l) Update and expand the assessments of the present state of pollution of the Mediterranean Sea by specific pollutants (metals other than mercury, chlorinated hydrocarbons) and prepare a short general report on the state of pollution of the Mediterranean Sea for submission to the forthcoming meeting of the Contracting Parties (September 1985).
- (m) Prepare the first assessment of the results obtained through the twelve research and study topics for submission to the next meeting of the Working Group.
- (n) Prepare for publication, with ICSEM and IOC, the Proceedings of the VII Workshop on Pollution of the Mediterranean Sea (Lucerne, 11-13 October 1984) and other publications.
- (o) Organize a meeting of experts on the technical implementation of the Protocol for the Protection of the Mediterranean Sea from Land-Based Sources of Pollution.
- (p) Convene a meeting on the effects of pollution on marine ecosystems to review the results of research projects in this field.
- (q) Convene two intercalibration exercises on microbiological methods for coastal water quality monitoring (Split in English and Marseille in French).

- (r) Organise intercalibration and testing of reference methods for the analysis of chemical contaminants in sea-water and sediments.
- (s) Follow activities of bodies whose work is relevant to the MED POL and sponsor the participation of scientists/experts in meetings organized by other bodies on subjects relevant to MED POL.

73. In implementing MED POL particular attention will be paid to the strengthening of the links between MED POL activities and the activities carried out through other components of MAP, specifically through the Regional Activity Centre for Specially Protected Areas (Tunis), the ROCC (Malta), the Blue Plan and the Priority Actions Programme.

BUDGETARY CONSIDERATIONS

74. The expenditures, commitments and allocations related to MED POL for the 1983-1985 period, in comparison to authorized allocations, are summarized in Table 1. The details of these expenditures and commitments are presented in Annex XI in the format requested by the Contracting Parties (UNEP/IG.43/6, Annex VII).

75. Expenditures related to the UNEP staff in the Mediterranean Co-ordinating Unit (salaries, travel, administrative services, etc.) are charged to the Chapter for Co-ordination of MAP's budget.

76. Cash and/or in kind contributions from UNEP's Regional Seas Programme Activity Centre (RS/PAC) and from the co-operating agencies are summarized in Table 2.

Table 1
Summary of expenditures and commitments from the MED Trust Fund,
compared to authorized allocations for MED POL activities
in the period 1983-1985
(in US dollars)

A. MONITORING

Year	Allocation	Expenditures/Commitments
1983	900,000 <u>1/</u>	370,955
1984	1,050,000 <u>2/</u>	1,050,000
1985	850,000 <u>2/</u>	850,000
Total	2,800,000	2,270,955

1/ Third Meeting of the Contracting Parties (UNEP/IG.43/6, Annex V)

2/ Extraordinary Meeting of the Contracting Parties (UNEP/IG.49/5)

B. RESEARCH

Year	Allocation	Expenditures/Commitments
1983	300,000	310,610
1984	460,000	434,390
1985	275,000	275,000
Total	1,035,000	1,020,000

Table 2
Contributions of co-operating agencies and UNEP (through RS/PAC)
towards the cost of MED POL in the period 1983-1985
(in US dollars)

Year	UNEP (RS/PAC)	FAO	WHO	IOC/ UNESCO	IAEA	WMO
1983	45,000	53,000	75,000	41,000	85,000	16,500
1984	55,000	65,000	100,000	35,000	70,000	17,500
1985	65,000	78,000	100,000	45,000	70,000	20,500
TOTAL	165,000	196,000	275,000	121,000	225,000	54,500

SUMMARY AND CONCLUSIONS

77. Since the last meeting of the Working Group (November 1983) considerable progress has been made in the implementation of MED POL - PHASE II:

- the number of designated MED POL National Co-ordinators has increased to 18 (formerly 17), i.e. all Contracting Parties have now designated their National MED POL Co-ordinators;
- three new national monitoring programmes (from Algeria, Lebanon and Morocco) have been received by the secretariat, increasing the number of received programmes to ten;
- the number of national monitoring programmes signed by UNEP and the relevant national authorities is now six (formerly five);
- 64 new research proposals have been received by the secretariat;
- the total number of ongoing MED POL - PHASE II research agreements has increased to 102 (formerly 57);
- the number of national research centres participating in MED POL research and monitoring activities is now 70 (formerly 50);
- one hundred and fifty one Mediterranean experts participated in fifteen meetings organized or co-sponsored in the framework of MED POL;
- twenty-six participants in MED POL received training and fellowships, totaling the equivalent of 16 person/month;
- assistance and support worth US \$ 1,085,700 has been provided to MED POL participants for purchase of equipment, material and services;
- the cost of trainees and fellowships to MED POL amounted to an additional US\$ 150,817;
- the computerized MED POL data bank has been strengthened; all acceptable data (about 25.000 environmental samples) from MED POL - PHASE I have been entered into the data bank;
- the state of pollution of the Mediterranean by petroleum hydrocarbons has been evaluated and the results have been prepared for publication;
- two additional analytical standards and reference materials have been prepared and distributed to participants in MED POL monitoring programme;
- 12 additional reference methods for marine pollution studies have been prepared, revised and tested (or are being tested);
- the preparations for a pilot project for monitoring of transport of pollutants into the Mediterranean Sea through the atmosphere are well advanced;

- the common maintenance service for equipment continued to be available to MED POL participants;
- the intercalibration of analytical techniques has been strengthened;
- the approved research activities, including the jellyfish programme, are being implemented without major problems.

78. In some fields the activities recommended by the Working Group and endorsed by the Contracting Parties showed a slower and insufficient progress:

- national monitoring programmes have not been submitted in agreed format by seven Contracting Parties (Egypt, France, Italy, Libya, Monaco, Spain and Syria);
- the reports submitted by the National MED POL Co-ordinators (only about 3000 environmental samples) do not provide sufficient information for the analysis of the progress in monitoring activities;
- large parts of the Mediterranean are not covered by systematic monitoring envisaged by MED POL - PHASE II;
- the approved financial allocations for MED POL have not been fully utilized because of delays in submission of national monitoring programmes, delays in submission of proforma invoices and delays in procuring the approved equipment;
- the preparations for the meeting of experts on the technical implementation of LBS protocol have not been completed and thus the meeting planned for 1984 had to be postponed to 1985;
- the analysis of the state of pollution of the Mediterranean Sea by metals other than mercury and by halogenated hydrocarbons has not been completed;
- the analysis of the overall scientific results of MED POL - PHASE I has not been completed yet.

Annex I

Status of national monitoring programmes and agreements (MED POL - PHASE II)

S T A T E	PROGRAMME RECEIVED BY UNEP <u>1/</u>	IMPLEMENTATION SINCE	STATUS OF AGREEMENT
ALGERIA	11.04.84	?	Signed (only by UNEP)
CYPRUS	13.12.82	March 1983	Signed
EGYPT	Not received		
FRANCE	Not received		
GREECE	25.11.83	1981 ^{2/}	Signed (only by UNEP)
ISRAEL	30.06.83	1981 ^{2/}	Signed
ITALY	Not received		
LEBANON	20.01.84	January 1983	Signed
LIBYA	Not received		
MALTA	06.06.82	December 1982	Signed
MONACO	Not received		
MOROCCO	30.10.84	October 1984	Signed
SPAIN	Not received		
SYRIA	Not received		
TUNISIA	20.12.83		Under negotiation
TURKEY	21.10.83	March 1983	Signed (only by UNEP)
YUGOSLAVIA	27.10.83	November 1982	Signed

1/ Only programmes submitted in the agreed format have been taken into account

2/ Continuation of activities carried out through MED POL - PHASE I

Annex II

National research centres and scientists designated as participants
in MED POL - PHASE II monitoring programme
(Designated Principal Investigator indicated by asterisk)

ALGERIA

INSTITUT DES SCIENCES MARINES ET
AMENAGEMENT DU LITORAL
Amirauté Jetée Nord
Alger

A. Chouikhi *
M. Bakalem
F. Aid

UNIVERSITE D'ALGER
Alger

M. Chamekh *

UNITE DE RECHERCHE D'ORAN
Université d'Oran
Oran

K. Bensalah *
M. Lindoulci

UNITE DE RECHERCHE D'ANNABA
Université d'Annaba
Annaba

M. Yahia *

UNITE DE RECHERCHE DE MOSTAGANEM
INES
Mostaganem

Mr. Ouali *

CYPRUS

FISHERIES DEPARTMENT
Ministry of Agriculture and
Natural Resources
5-7 Tagmatarchou Poulou
Nicosia

L. Loizides *
L. Athanassiadou *
P. Loizides

MEDICAL AND PUBLIC HEALTH
SERVICE
Ministry of Health
Nicosia

F. Neocleous *
E. Ioannou

FRANCE

CENTRE OCEANOLOGIQUE DE BRETAGNE
B.P. 337
29273 Brest Cédex

M. Chaussepied *

INSTITUT SCIENTIFIQUE ET TECHNIQUE
DES PECHEES MARITIMES (ISTPM)
Rue de l'île d'Yeu
B.P. 1040
44037 Nantes Cédex

Y. Thibaud *

GREECE

ENVIRONMENTAL POLLUTION CONTROL
PROJECT (PERPA)
147 Patission Str.
Athens 11251

S. Sotiracopoulou *
D. Spala *

INSTITUT PASTEUR
127 Vassilissis Sofias Ave.
Athens

B. Krikelis *

INSTITUTE OF OCEANOGRAPHY AND
FISHERIES RESEARCH
Aghios Kosmas
Athens 16604

F.Voutsinou-Taliadouri *
N. Frilingos *
E. Papageorgiou *

NUCLEAR RESEARCH CENTRE "Democritos"
Aghia Paraskevi
Athens

A. Grimanis *
C. Papadopoulou *
N. Mimicos *

GENERAL CHEMICAL LABORATORY
OF THE STATE
16 Tsoha Street
Athens

M. Botsivali *

LABORATORY OF ZOOLOGY
University of Athens
Panepistimioupolis
Athens

M. Moraitou-Apostolopoulou *

DEPARTMENT OF APPLIED PHYSICS
Laboratory of Meteorology
University of Athens
Hippocratous Str. 33
Athens

A. Laskaratos *

DEPARTMENT OF INORGANIC AND
ENVIRONMENTAL CHEMISTRY
University of Athens
13A Navarinou Str.
Athens

M. Scoullas *

SCHOOL OF HYGIENE
Department of Microbiology
196 Alexandras Ave.
Athens 11522

J. Papadakis *

LABORATORY OF HYDRAULICS
Polytechnic School
University of Thessaloniki
Thessaloniki

J. Ganoulis *

LABORATORY OF ANALYTICAL CHEMISTRY
School of Physics and Maths
University of Thessaloniki
Thessaloniki

G. Vasilikiotis *

LABORATORY OF ZOOLOGY
School of Physics and Maths
University of Thessaloniki
Thessaloniki

M. Katoulas *

LABORATORY OF ECOLOGY AND
ENVIRONMENT PROTECTION
Veterinary School
University of Thessaloniki
Thessaloniki

S. Kilikidis *

LABORATORY OF HYGIENE
School of Medicine
University of Thessaloniki
Thessaloniki

G.A. Stathopoulos *

DEPARTMENT OF BIOLOGY
University of Patras
Patras

C. Christodoulou *
J. Lykakis *

DEPARTMENT OF GEOLOGY
University of Patras
Patras

G. Ferentinos *
S. Varnavas *

DEPARTMENT OF THERMODYNAMICS
University of Patras
Patras

D. Papailiou *

DEPARTMENT OF CIVIL ENGINEERING
University of Patras
Patras

S.G. Grigoropoulos *

ISRAEL

ISRAEL OCEANOGRAPHIC AND LIMNOLOGICAL
RESEARCH

Tel Shikmona
P.O. Box 830
Haifa

B. Krumgalz *
A. Golik *

"DR. FELIX" PUBLIC HEALTH LABORATORY
Ministry of Health
Abu Kebir
P.O. Box 8255
Tel Aviv

Y. Yoshpe-Purer *

DISTRICT PUBLIC HEALTH LABORATORY
Ministry of Health
P.O. Box 9526
Haifa

A. Mates *

DISTRICT PUBLIC HEALTH LABORATORY
Ministry of Health
Beer-Sheva

N. Platzner *

ENVIRONMENTAL PROTECTION SERVICE
Ministry of the Interior
Jerusalem

Y. Cohen *

LEBANON

MARINE RESEARCH CENTRE
National Council for Scientific Research
P.O. Box 123
Jounieh

H. Kouyoumjian *
H. Hajenian *
E. Najjar
M. Tilbian
J. Belian
J. Yazbeck

MALTA

TOXICOLOGY UNIT
Department of Health
Merchant's Street
Valletta

M. Sammut *

BACTERIOLOGICAL LABORATORY
Works Department
New Lyceum
Msida

V. Gauci *

DEPARTMENT OF MATHEMATICS AND SCIENCES
University of Malta
Msida

V. Axiak *

MOROCCO

INSTITUT NATIONAL D'HYGIENE
B.P. 769
Rabat

N. Ben Mansour *

OFFICE NATIONAL DE L'EAU POTABLE
Division de Controle de la
qualité des eaux
B.P. Rabat-Chellah
Rabat

A. Foutlane *

INSTITUT SCIENTIFIQUE DES PECHEES
MARITIMES
B.P. 21
Casablanca

H. Idrissi *

LABORATOIRE DE TOXICOLOGIE
Institut Agronomique et Vétérinaire
"Hassan II"
Rabat-Agdal

M. Kessabi *
M. Benabdenbi *

LABORATOIRE D'HYGIENE ET INDUSTRIE
DES DENREES ALIMENTAIRES D'ORIGINE
ANIMALE
Institut Agronomique et Vétérinaire
"Hassan II"
Rabat-Agdal

M. Marrackchi *
M. Belmlih *

CENTRE INTERNATIONAL DE GENIE SANITAIRE
Ecole Mohammadia d'Ingénieurs
B.P. 765
Rabat

M. Nejjar *
M. Ouazzar *
M. Bouziane *
M. Jellal *
M. Mahyaoui *

SPAIN

ESCUELA UNIVERSITARIA POLITECNICA
Plaza del Hospital
Girona

J. Arnau *

AYUNTAMIENTO DE BARCELONA
Servicio del Medio Ambiente
Passeig de Circumvalació 1
Barcelona 08003

J. Martí i Valls *

SERVEI DE SANEJAMENT AMBIENTAL
Direcció General de Promoció de la Salut
Generalitat de Catalunya
Passeig Lluís Companys 7
Barcelona

M. González Cabré *
A. Bardají

INSTITUTO QUIMICO DE SARRIA
C/ del Instituto Químico de Sarrià
Barcelona 08017

J. Obiols *

INSTITUTO DE INVESTIGACIONES PESQUERAS
Passeig Nacional s/n
Barcelona 08003

A. Ballester *

INSTITUTO DE QUIMICA BIO-ORGANICA
c/ Jorge Girona Salgado s/n
Barcelona 08034

A. Albaigés *

ESCUELA UNIVERSITARIA DE CASTELLON
Apartado 224
Castellon de la Plana

J. Medina Escriche *

DEPARTAMENTO DE QUIMICA ANALITICA
Facultad de Ciencias Químicas
Universitat de Valencia
C/Doctor Moliner
Burjasot (Valencia)

F. Bosch *

DEPARTAMENTO DE QUIMICA TECNICA
Facultad de Ciencias
Universidad de Valencia
Apartado 99
Alicante

F. Ruiz Beviá *

CENTRO OCEANOGRAFICO DE BALEARES
Muelle de Pelaires
Palma de Mallorca

G. Chacártegui *

CENTRO OCEANOGRAFICO DEL MAR MENOR
C/Magallanes, s/n
San Pedro del Pinatar (Murcia)

A. Rodríguez de León *

ESCUELA NACIONAL DE SANIDAD
Ciudad Universitaria
Madrid 3

M. Mariño *

DEPARTAMENTO DE ECOLOGIA
Facultad de Ciencias
Universidad de Málaga
Málaga

X. Niell *

TUNISIA

INSTITUT PASTEUR
13 Place Pasteur
Tunis

A. Chadli *
M. Jekov
C. Capape

INSTITUT NATIONAL SCIENTIFIQUE ET
TECHNIQUE D'OCEANOGRAPHIE ET DE
PECHES (INSTOP)
Salambo

S. Hadj Ali *
M. Amara
M. Dridi

TURKEY

INSTITUTE OF MARINE SCIENCES AND
TECHNOLOGY
Dokuz Eylul Universitesi
P.K. 478
Konak
Izmir

E. Izdar *
A. Muezzinoglu *

DEPARTMENT OF MARINE SCIENCES
Middle East Technical University
P.K. 28
Erdemli/Icel

U. Unluata *

YUGOSLAVIA

MARINE RESEARCH AND TRAINING CENTER
University of Ljubljana
JLA 65 .
66330 Piran

R. Planinc *
P. Tusnik
T. Turk

CENTRE FOR MARINE RESEARCH ROVINJ
"Rudjer Boskovic" Institute
G. Paliaga 5
52210 Rovinj

D. Bazulic *
D. Fuks
D. Degobbis
N. Smodlaka

"JOZEF STEFAN" INSTITUTE
University of Ljubljana
Jamova 39
61000 Ljubljana

P. Stegnar *
M. Leskovsek

INSTITUTE FOR OCEANOGRAPHY AND FISHERIES
Mose Pijade 63
P.O. Box 114
58000 Split

N. Krstulovic *
M. Solic
T. Zvonaric
I. Vukadin
J. Dujmov

CENTRE FOR MARINE RESEARCH ZAGREB
"Rudjer Boskovic" Institute
P.O. Box 1016
41001 Zagreb

BIOLOGICAL INSTITUTE
P.O. Box 39
Dubrovnik

HEALTH PROTECTION INSTITUTE
Nazorova 3
52000 Pula

FACULTY OF CIVIL ENGINEERING
University of Zagreb
J. Rakuse 1
41000 Zagreb

INSTITUTE OF PUBLIC HEALTH
B. Kidrica 52a
51000 Rijeka

INSTITUTE OF PUBLIC HEALTH
Balkanska 46
58000 Split

A. Skrivanic *
V. Zutic *
M. Picer
M. Branica
B. Cosovic
D. Hrsak
Z. Kozarac

V. Vilicic *

C. Skabic *
V. Buttignoni
Lj. Dravec

L. Sipos *
M. Pedisic
M. Marusic

A. Sablic *
V. Strcaj
S. Bokan
M. Kras
T. Gudac

N. Stambuk-Giljanovic *
V. Smolcic
T. Tomic

Annex III

Parameters, areas and stations covered by national monitoring programmes

(a) Parameters included in national monitoring programmes:

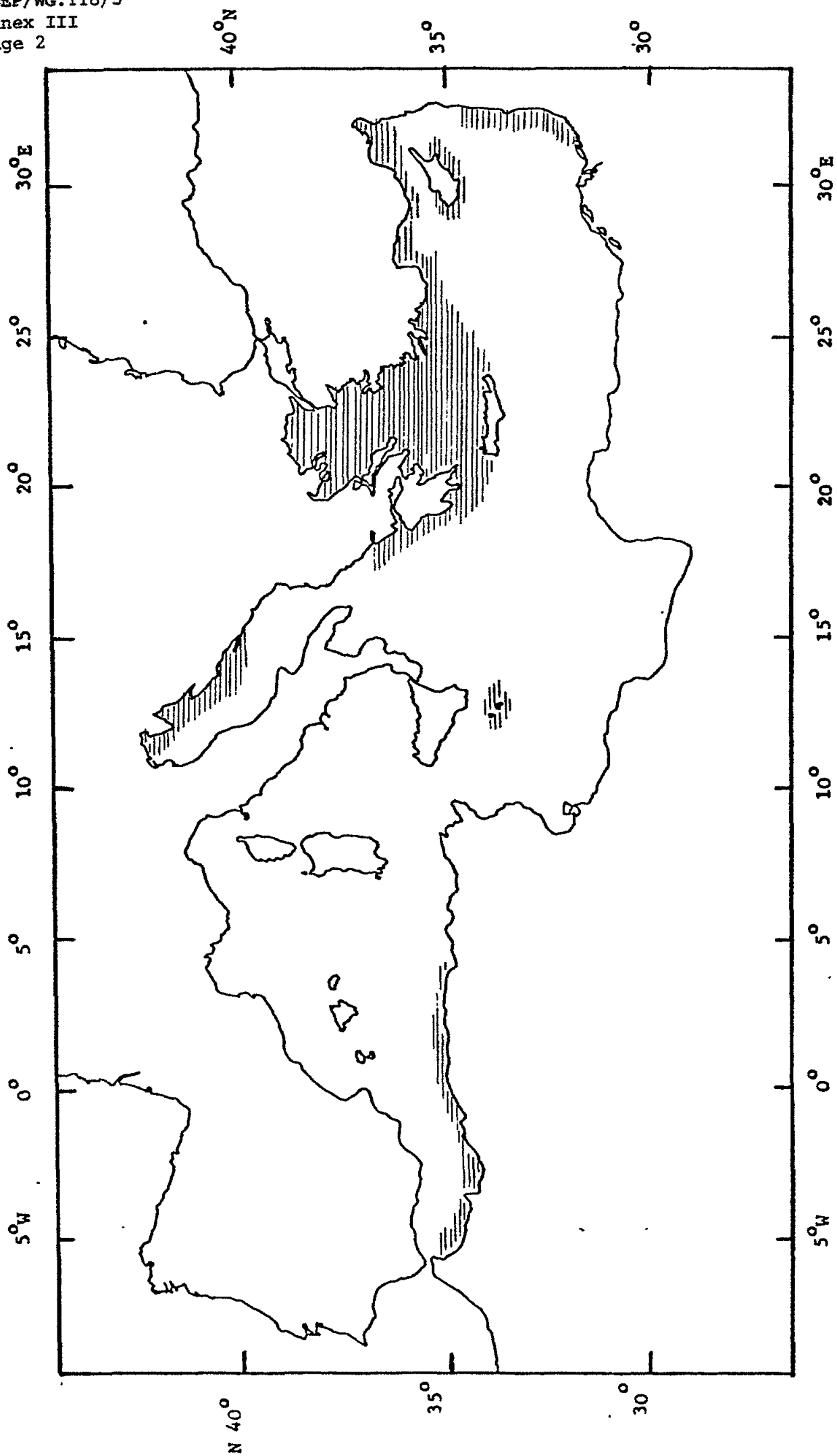
- standard physical, chemical and meteorological parameters;
- microorganisms, including plankton and viruses;
- halogenated hydrocarbons;
- petroleum hydrocarbons;
- other organic contaminants.

(b) Matrices monitored:

- estuarine waters;
- sea-waters;
- sediments;
- suspended matter;
- beaches;
- marine organisms (see below for details);
- other.

(c) Marine organisms monitored:

- | | |
|------------------|--|
| - Molluscs | Donax trunculus
Mytilus edulis
Mytilus galloprovincialis |
| - Crustacea | Nephrops norvegicus
Penaeus kerathurus
Parapenaeus longirostris |
| - Migratory Fish | Sardina pilchardus
Thunnus alalunga
Thunnus thynnus
Xiphias gladius |
| - Demersal Fish | Mullus barbatus
Mullus surmuletus
Pagellus erythrinus
Perna perna
Upeneus molluccensis |



(d) Areas covered by stations of national monitoring programmes
(MED POL - PHASE II)

(e). NUMBER OF STATIONS MONITORED FOR STANDARD PHYSICAL, CHEMICAL AND BIOLOGICAL PARAMETERS (including BOD, COD and total suspended solids)

	<u>ALGERIA</u>	<u>CYPRUS</u>	<u>GREECE</u>	<u>ISRAEL</u>	<u>LEBANON</u>	<u>MALTA</u>	<u>MOROCCO</u>	<u>TURKEY</u>	<u>YUGOS.</u>	<u>TOTAL</u>
Estuarine water	-	-	1	-	-	-	5	8	-	14
Sea water	-	55	58	-	10	-	5	33	119	280

(f) NUMBER OF STATIONS MONITORED FOR MICROORGANISMS
(including Faecal coliforms, faecal streptococci, phytoplankton, zooplankton and viruses)

[illegible]

NUMBER OF STATIONS MONITORED FOR MERCURY AND CADMIUM

	ALGERIA	CYPRUS	GREECE	ISRAEL	LEBANON	MALTA	MOROCCO	TURKEY	YUGOS.	TOTAL
Estuarine water	-	-	1	-	-	-	5	-	-	6
Sea water	-	-	19	-	-	7	-	-	6	32
Sediments	4	32	2	14	1	7	9	41	37	147
Suspended Matter	-	-	2	-	-	-	3	8	6	19
Molluscs	-	-	41	-	1	-	6	-	29	77
Crustacea	-	2	-	-	-	7	-	-	-	9
Migratory fish	-	2	32	-	-	7	6	-	-	47
Demersal fish	-	2	47	1	-	7	6	-	8	71
Other biota	4	-	15	13	-	-	-	41	13	86

(h) NUMBER OF STATIONS MONITORED FOR OTHER METALS (including Co, Ni, Pb, Zn, Cr, Cu, Fe and Mn)

[illegible]

(i) NUMBER OF STATIONS MONITORED FOR HIGH MOLECULAR WEIGHT HALOGENATED HYDROCARBONS

	ALGERIA	CYPRUS	GREECE	ISRAEL	LEBANON	MALTA	MOROCCO	TURKEY	YUGOS.	TOTAL
Estuarine water	-	-	1	-	-	-	4	-	-	5
Sea water	-	-	18	-	-	-	-	-	-	18
Sediments	-	32	-	-	1	-	10	-	26	69
Suspended Matter	-	-	-	-	-	-	4	-	2	6
Molluscs	-	-	-	-	1	-	6	-	12	19
Crustacea	-	2	-	-	1	7	-	-	10	10
Migratory fish	-	2	-	-	-	7	6	-	-	15
Demersal fish	-	2	-	-	-	7	6	-	4	19
Other biota	-	-	-	-	-	-	-	41	9	50

(j) NUMBER OF STATIONS MONITORED FOR PETROLEUM HYDROCARBONS (including oil slicks and tar balls)

	ALGERIA	CYPRUS	GREECE	ISRAEL	LEBANON	MALTA	MOROCCO	TURKEY	YUGOS.	TOTAL
Sea water	3	8	1	-	-	7	6	33	37	95
Sediments	3	32	-	-	-	-	11	41	11	98
Beaches	-	2	-	25	-	-	2	-	-	29
Crustacea	-	2	-	-	-	-	-	-	-	2
Migratory fish	-	2	-	-	-	-	-	-	-	2
Demersal fish	-	2	-	-	-	-	-	-	-	2
Other biota	3	-	-	-	-	-	-	-	-	3

(k) NUMBER OF STATIONS MONITORED FOR OTHER ORGANIC CONTAMINANTS
(including detergents, N, P, total organic carbon, polyaromatic hydrocarbons and phenols)

	ALGERIA	CYPRUS	GREECE	ISRAEL	LEBANON	MALTA	MOROCCO	TURKEY	YUGOS.	TOTAL
Estuarine water	-	-	-	-	-	-	2	-	1	3
Sea water	-	-	30	-	10	7	4	-	9	60
Sediments	-	-	1	-	-	-	-	-	-	1
Suspended Matter	-	-	1	-	-	-	-	-	-	1

(l) TOTAL NUMBER OF MONITORING STATIONS

	ALGERIA	CYPRUS	GREECE	ISRAEL	LEBANON	MALTA	MOROCCO	TURKEY	YUGOS.	TOTAL
Estuarine water	-	-	1	-	-	-	10	8	1	20
Sea water	4	208	69	64	10	7	23	33	127	545
Sediments	4	32	21	17	1	7	11	41	40	174
Suspended Matter	-	-	3	-	-	-	4	8	6	21
Beaches	-	2	-	25	-	-	2	-	-	29
Molluscs	-	-	54	-	1	-	6	-	31	92
Crustacea	-	2	-	-	1	7	-	-	-	10
Migratory fish	-	2	32	-	-	7	6	-	-	47
Demersal fish	-	2	47	1	-	7	6	-	8	71
Other biota	4	-	15	13	-	-	-	41	14	87

Annex IV

Reports received during 1983 and 1984 on monitoring activities

State	Monitoring of sources of pollution			Monitoring of coastal waters, including estuaries	Monitoring of reference areas (open seas)	Monitoring of the transport of pollutants through the atmosphere
	a1/	b2/	c3/			
ALGERIA	-	-	-	-	-	-
CYPRUS	1983	-	-	1983	-	-
EGYPT	-	-	-	-	-	-
FRANCE	-	X	-	1982	-	-
GREECE	-	-	-	-	-	-
ISRAEL	-	X	-	1982-1983	-	-
ITALY	-	X	-	-	-	-
LEBANON	-	-	-	-	-	-
LIBYA	-	-	-	-	-	-
MALTA	-	-	-	1982-1983	-	-
MONACO	-	-	-	-	-	-
MOROCCO	-	-	-	-	-	-
SPAIN	-	-	-	1982-1983	-	-
SYRIA	-	-	-	-	-	-
TUNISIA	-	-	-	-	-	-
TURKEY	-	-	-	-	-	-
YUGOSLAVIA	1983	-	-	1983	1983	-

1/ Type and amount of pollutants discharged directly into the coastal waters from land-based (coastal) sources

2/ Type and amount of pollutants dumped directly into the sea

3/ Type and amount of pollutants dumped in emergency or released accidentally into the sea

Annex V

Ongoing MED POL research projects

Activity 'A' : Development and testing of sampling and analytical techniques
for monitoring of marine pollutants

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
FRA 10 I.N.S.E.R.M. Service Commun no.1 1,Ave. Jean Lorrain 06300 Nice	Révalidation de germes fécaux indicateurs de pollution marine. Numération par filtration sur membranes des eaux marines à vocation balnéaire (P. BERNARD, 2000)	WHO
ITA 18 Catt. di Chimica Generale ed Inorganica Dip. di Chimica Univ. di Catania V. le A.Doria 6 95125 Catania	Studies and monitoring of trace metals in marine waters by inductively coupled plasma (ICP) emission spectrometry (G. C. PAPPALARDO, 4000)	IOC
ITA 19 L.E.N.A. - CNR - Centro di Radio- chimica e Analisi per Attivazione Università di Pavia V. le Taramelli, 10 27100 Pavia	Nuclear methods for trace elements determination in environmental related matrices (M. GALLORINI, 3000)	IAEA
ITA 29 Lab. di Igiene del Territorio, Istituto Superiore di Sanità Rome	Research on the hygienic conditions of coastal waters and beaches in a sample zone with reference to the density of microbial indicators and of pathogen bacteria and evaluation of sampling and control criteria and microbial pollution's impact on coastal environment (L. VILLA, 5500, 5000)	WHO

Activity 'A' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
SPA 02 Conselleria d' Ecologia i Medi Ambient, Badalona	Evolución de la contaminación bacteriana de origen fecal en el litoral Badalonés, a lo largo del día y a su vez en el tiempo (F. LUCENA-GUTIERREZ, 4000, 4000)	WHO combined with SPA 04
SPA 04 Conselleria d' Ecologia i Medi Ambient, Badalona	Diferencias de eficacia en la recuperación de Estreptococos fecales en las temperaturas de incubación de 37° y 44° C (F. LUCENA-GUTIERREZ)	WHO
TUN 02 Service de Bacte- riologie des Eaux et produits ali- mentaires, Tunis	Etude comparative de la valeur spécifique des coliformes fécaux et des Streptocoques fécaux comme marqueurs de la pollution fécale des eaux de baignade sur le littoral tunisien (A. CHADLI, 3000, 3000)	WHO
YUG 09 Dep. of Physics Centre for Marine Research, Rudjer Boskovic Inst. Zagreb	Development of X-ray emission spectroscopy as multi-elemental analytical techniques for monitoring marine pollutants (V. VALKOVIC, 2000)	IAEA
YUG 18 Center for Marine Research, Rudjer Boskovic Inst. Zagreb	Development of new electroanalytical techniques for determination of surface active substances and detergents in sea-water and sea surface microlayer (B. COSOVIC, 3500)	IOC

Activity 'D' : Epidemiological studies related to Environmental Quality Criteria

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
FRA 09 Inst. scientifique et technique des Pêches, Nantes	Programme d'évaluation de la contamination en mercure et méthylmercure en Méditerranée: analyse dans les poissons et coquillages (C. ALZIEU, 3500)	FAO
GRE 08 D. of Bacteriology School of Hygiene L. Alexandras 196 Athens	Relation between densities of indicator organisms and microbial pathogens in sea-water (J. PAPADAKIS, 5000, 5500)	WHO
GRE 09 Inst. Pasteur Hellénique 127, Av. Vas.Sofias 11521 Athènes	Research of enteric viruses in aquatic environments (KRIKELIS, 4500)	WHO
GRE 13 Athens School of Hygiene L. Alexandras 196 11522 Athens	Investigation for neurotoxin in shellfish of Elfsis and Saronicos Gulfs (J.A. PAPADAKIS, 5000)	WHO
ISR 06 Environmental Health Lab., Jerusalem	Epidemiological study of the relationship between microbial quality of the coastal sea-water and the health of swimmers (B. FATTAL, 10000, 10000)	WHO
ISR 08 The A. Felix Public Health Laboratory Ministry of Health Tel-Aviv	Prevalence of staphylococcus aureus and <u>Pseudomonas aeruginosa</u> in coastal water of Israel (Y. YOSHPE-PURER, 5000, 5000)	WHO

Activity 'D' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
ITA 38 Ist. di Chimica Generale (GROC) Univ. di Genova Vle Benedetto XV, 3 Genova	Determination of total mercury, methyl-mercury and selenium in seafood (R. CAPELLI, 3000, 3500)	FAO
SPA 03 Lab. Municipal Badalona	Estudio exhaustivo de los hongos que se presentan en una playa contaminada; importancia relativa según la incidencia sobre la salud. Aproximacion a uno y indicador fungico (J. IZQUIERDO, 3000, 5000)	WHO
YUG 26 Institute of Public Health Dept.of Nutrition Zagreb	The analysis of mercury and methylmercury in seafood in various parts of the Mediterranean (R. BUZINA, 3000, 4000)	FAO
YUG 27 Institute of Public Health Dept.of Nutrition Zagreb	Evaluation of methylmercury in Mediterranean populations and related health hazards (R. BUZINA, 8000, 6000)	WHO
YUG 28 Institute of Public Health Dept.of Nutrition Zagreb	Analysis of human hair for assessing exposure and possible health hazards in Mediterranean populations due to methylmercury in seafood (L. KOSTA, 8500, 7500)	WHO

Activity 'F' : Research on oceanographic processes

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
GRE 01 Dept. of Hydraulics Univ. of Thessaloniki	Development of mathematical models for horizontal transport of pollutants in coastal areas of the Mediterranean Sea (J. GANOULIS, 3400)	IOC
GRE 06 Lab. of Physical Geography of Athens Couponia-Kaissariani Athens	Dynamical study of surface cold water patterns appearing in the Gulf of Korinth (A. LASCARATOS, 9900)	IOC
GRE 10 National Technical Univ. of Athens Engineering, Athens	Modelling pollutant circulation and fate in coastal waters/regions (M. BONAZUNTAS, 5000)	IOC
ITA 12 Ist. Studio Dinamica Grandi Masse CNR-S. Polo 1364 30125 Venice	Modelling of circulation processes in the Northern Adriatic and their influence on the distribution of pollutants, considered as passive scalars (P. MALANOTTE RIZZOLI, 6000)	IOC
ITA 23 Istituto di Fisica Univ. of Roma	Vertical transport processes of marine water near the Italian coasts (E. SALUSTI, 3600)	IOC
TUR 01 Dept. of Marine Science, METU Erdemli, Içel	Oceanographic processes in the Northeastern Levantine coastal waters (U. UNLUATA, 7000)	IOC
TUR 02 METU Erdemli, Içel	Pollutant transport processes at Goksu, Seyhan and Ceyhan river mouths (E. OZSOY)	combined with TUR 02 IOC

Activity 'F' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
YUG 06 Dept. of Physical Oceanography Split	Low-frequency current field oscillations in the coastal zone of the Central Adriatic (M. GACIC, 8000)	IOC
YUG 15 Center for Marine Research, Rudjer Boskovic Inst. Zagreb	Mathematical modelling of horizontal circulation and vertical distribution of currents in the Northern Adriatic (M. KUZMIC, 3800)	IOC
YUG 25 Inst. of Biology Univ. E. Kardelj Askerceva 12 Ljubljana	Modifications of the suspended organic matter composition and sedimentation in the polluted coastal waters (J. FAGANELI, 6300)	IOC
YUG 36 Inst. of Oceanography & Fisheries POB 114 58000 Split	Turbidity transport by residual currents (M. ZORE-ARMANDA, 5000)	IOC

Activity 'G' : Research on the toxicity, persistence, bioaccumulation, carcinogenicity and mutagenicity

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
EGY 04 Dept. of Environ. Sciences, UNARC Alexandria	Acute and chronic toxicology of widely used dispersants, PCB's, chlorinated pesticides and their combinations to marine biota and their biomagnification in Alexandria region (A.K.H. EL-SEBAE, 4000, 4000, 2000)	FAO
FRA 01 Station Marine d'Endoume Marseille	Recherches sur toxicité, le persistance, le bio-accumulation, la carcinogenecité et le mutagenecité (R. KAIM-MALKA, nil)	FAO
FRA 08 C.E.R.B.O.M. Nice	Projet d'études de la toxicité de composés en milieu marin: toxicité directe immediate, toxicité auprès biodegradation et toxicité induit à travers les chaines biologiques (M. AUBERT, 4000)	FAO
GRE 02 Zoological Lab. Univ. of Athens Athens	Studies on toxicity of oil dispersants and of oil dispersants mixture to various marine organisms. Combined effects of dispersants and some heavy metals (M. MORAITOU-APOSTOLOPOULOU, nil, 4000, 2000)	FAO
GRE 07 Zoological Lab. Univ. of Athens	L'influence toxique des dispersants (M.J. CASTRISI-CATHARIOS, 2500, 1200, nil)	FAO
GRE 26 Lab. of Zoology Univ. of Athens 15771 Athens	Study of the responses of marine organisms to pollutants at the level of functional proteins (A.A. HARITOS, 4000)	FAO
ISR 07 Lab. of Population Biology Univ. of Haifa, Haifa	The genetic structure of marine organisms as a detector and monitor of marine pollution (E. NEVO, 4000, 4000)	FAO

Activity 'G' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
ISR 09 Inst. of Evolution Univ. of Haifa Haifa	Complex pollution effects of two heavy metals (Mercury and Cadmium) on the genetic structure of marine organisms (E. NEVO, 5000)	FAO
ISR 10 Chem. Oceanography & Marine Pollution IO & L Research Tel-Shikmona, Haifa	Bioaccumulation of mercury and its distribution in various organs of some shore fishes off the Mediterranean Sea coast (B.S. KRUMGALZ, 4000)	FAO
ITA 06 Dept. of Environ- mental Mutage- nesis & Carcino- genesis Inst. of Hygiene Univ. of Genoa	Mutagenicity, genotoxicity, interactions and metabolism of chemical compounds in the marine organisms (S. DE FLORA, 3000, 4000, 4000)	WHO
ITA 21 Inst. of Marine Biology, CNR Venice	Physiological and biochemical response of marine organisms to PBC pollution in a wide range of environmental factors (L. DALLA VENEZIA, 1500, 1500, 3000)	FAO
ITA 28 Environmental Mutagenesis Dept. CNR - Pisa	Mutagenic and carcinogenic studies of marine pollution (G. BRONZETTI, 3000, 4000, 4000)	WHO
ITA 30 Faculty of Medi- cine Univ. of Rome Rome	Research into the toxicity, persistence, bio-accumulation and mutagenicity of hydrocarbons, detergents and some heavy metals in the sea (Tyrrhenian and Adriatic areas) (G.P. DE RENZI, nil, 3000, 3000)	WHO

Activity 'G' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
ITA 31 Gruppo Ricerca Oceanologica Genova	Enzymic aspect of the xenobiotic-metabolizing systems in <i>Mytilus galloprovincialis</i> Lam. (M. ORUNESU, 3000, 3000, 2000)	FAO
ITA 39 Ist. di Biologia Ambientale Univ. di Siena, Siena	Contaminants in resident and migratory birds in the Eastern Mediterranean fly-away (A. RENZONI, 2000)	FAO
MAL 01 Dept of Maths Univ. of Malta Msida	Research on the effects of oil dispersants on marine organisms (V. AXIAK, 3000, 3000, 2000)	FAO
TUR 05 Dept of Biological Sciences, METU Ankara	Design and development of "Bio-Test" methods that will be used to assay the pollutants listed in the annexes of the Protocols, with respect to their toxicity residual effects, bio-degradabilities, mutagenicities and carcinogenicities (H. BAGCI, 4000, 2500, 2000)	FAO
YUG 05 Lab. of Biology IOF, Split	Research on the effects of oil dispersants on marine organisms (M. TUDOR, 3000, 3000, 2000)	FAO
YUG 14 Center for Marine Research, Rovinj Inst. Physiologische Chemie Mainz; and Rudjer Boskovic Inst. Zagreb	The correlation between levels and effects of mutagenic pollutants in marine environment (B. KURELEC, 5000)	WHO

Activity 'G' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
YUG 21 Center for Marine Research, Rudjer Boskovic Inst. Zagreb	Toxicity and bioaccumulation of pollutants in marine organisms (M. OZRETIC, 3000, 3500)	FAO
YUG 23 Inst. for biological Medical Inv. of SR Montenegro Titograd; and Dept of Marine Biology of Ocean. Kotor	Halogen containing Terpenoids and related substances in marine organisms (M. GASIC, 3000, 4000)	FAO
YUG 38 Center for Marine Research, Rudjer Boskovic Inst. 52210 Rovinj	Toxicity of pollutants to marine organisms physiological and biochemical studies (M. OZRETIC, 3000)	FAO

Activity 'H' : Eutrophication and concomittant plankton blooms

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
ALG 04 Dept.de Production Primaire C.R.O.P. „ Algiers	Eutrophisation et floraisons concomitantes de plancton, dans le port d'Alger (F. AID, 2000, 2000, 1500)	FAO
TUN 04 Lab. d'Ocean. et pollution marine Salammbô	Eutrophisation et floraisons concomitantes de plancton (M.S. HADJ ALI, 3000, 3000, 2000)	FAO
TUR 08 Inst. of Marine Sciences 9 Eylül Univ. Bornova/Izmir	Elemental transfer process and eutrophication in Buyuk Menders Delta (Great Meander Delta) and their offshore distribution, Eastern Aegean-Turkey (E. IZDAR, 3200, 2500, 2000)	FAO
YUG 03 Inst. of Oceanogr. and Fisheries Split	Eutrophication and concomitant placton blooms in the coastal area of the Central Adriatic (I. MARASOVIC, 3000, 3000, 2000)	FAO
YUG 08 Center for Marine Research, Rudjer Boskovic Inst. 41001 Zagreb	Relationships between phytoplankton blooms and dissolved organic matter in the Northern Adriatic (V. ZUTIC, 2000, 3500)	FAO
YUG 13 Center for Marine Research, Rudjer Boskovic, Inst. 41001 Zagreb	Modelling eutrophication processes in the Northern Adriatic (T. LEGOVIC, 2000, 3500)	FAO
YUG 24 Biological Inst. Univ. of Kardelj Ljubljana	Eutrophication and concomittant plankton blooms Occurrence and development of plankton blooms in the Gulf of Trieste (the eastern part) as a possible consequence of pollution-induced eutrophication (N. FANUKO, 2500, 2000, 2000)	FAO

Activity 'I' : Pollution-induced ecosystems modifications

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
FRA 03 Station Marine d'Endoume Marseille	Elaboration de critères fondamentaux pour la surveillance écologique continue long terme de la pollution (G. STORA, nil)	FAO
GRE 14 Lab. de Zoology Univ. d'Athènes Athens	Etude comparative des modifications des écosystèmes des eaux côtières du Golfe et du Port de Patras soumises à l'influence des polluants (J. CASTRITSI-CATHARIOS, 2000)	FAO
GRE 17 Zoological Lab. Univ. of Athens Athens	Effects of pollution on the distribution of Molluscs in the Messolongi Lagoon and adjacent areas (A. NICOLAIDOU, 3000)	FAO
GRE 23 Inst. of Oceano- graphy & Fisheries 16604 Athens	Etude d'impact de la pollution sur les herbiers de <u>Posidonia oceanica</u> dans le golfe Saronikos (P. PANAYOTIDIS, 3000)	FAO
ITA 08 Inst. di Zoologia Univ. Genova Genova	Evaluation of the conditions of some Posidonia meadows in the North-Western Mediterranean sea and eventual effects of pollutants on the associated fauna (M. SARA, 2000, 2000, 3000)	FAO
ITA 22 Ist. di Scienze Univ. Catania	Relations between pollutions and biocoenoses in the roadstead of Augusta (Eastern Sicily) (S. DI GERONIMO, 4000, 3000, 2000)	FAO
ITA 24 Inst. of Zoology Univ. of Pisa, Pisa	Effects of pollution on the benthos (G. COGNETTI, 1000, 3000, 2000)	FAO

Activity 'I' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
ITA 26 Istit. di Scienze Ambientali Marine Gruppo Ricerca Oceanologica Univ.di Genova Genova	Conditions actuelles des biocoenoses benthiques du plateau ligure et des îles de l'Archipel toscan (G. ALBERTELLI, nil, 3000, 2000)	FAO
LEB 01 CNRS Beyrouth	Modifications des écosystèmes par la pollution (S. LAKKIS, 3000, 2000, 2000)	FAO
TUR 07 Inst. of hydrob. Ege Univ. Bornova/Izmir	The effects of pollution on the benthic and pelagic ecosystems in the Bay of Izmir (A. KOCATAS, 2500, 2500, 2000)	FAO
YUG 02 Inst. of Oceanogr. Split	Pollution-induced ecosystem modification in the coastal area of the Central Adriatic (D. REGNER, 2000, 2000, 2000)	FAO
YUG 07 Inst. of Oceanogr. Split	Investigation of zooplakton communities in the Northern Adriatic Sea (A. BENOVIC, 2000, 2000, 2000)	FAO
YUG 19 Rudj. Boskovic Institute Rovinj	Monitoring of ecosystems modifications in the Northern Adriatic sea induced by eutrophication and anthropogenic activities (D. ZAVODNIK, 3000, 3000, 2000)	FAO

Activity 'J' : Effects of thermal discharges on coastal organisms and ecosystems

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
CYP 01 Dept. of Fisheries Nicosia	Study of Littoral, Benthic & fish communities in the Vasilikos-Moni area in relation to the effect on those of pollution from thermal effluents (A. DEMETROPOULOS, 4500, 4000, 4500)	FAO
ITA 13 Ist. di Zoologia Fac. di Scienze Univ. di Roma Roma	Effects of thermal effluent on sea-shore organisms at Torvaldaliga (Civitavecchia-Roma) (E. TARAMELLI-RIVOSECCHI, 1000, 3000, 4500)	FAO

Activity 'K' : Biogeochemical cycles of specific pollutants

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
EGY 03 UNARC Alexandria	Biogeochemical cycles of specific pollutants Survival of pathogens in the Mediterranean (F. EL-SHARKAWI, 5000, 5000, 5000)	WHO
EGY 07 UNARC Alexandria	Biogeochemical cycles of specific pollutants (I.H. EL-SOKKARY, 3000, 3500)	FAO
FRA 06 Fac. des Sciences St. Jérôme Marseille	Contrôle des métaux lourds dans les écosystèmes littoraux et les chaînes alimentaires marines (N. VICENTE, 1000, 1000, 3000)	FAO
GRE 22 Inst. of Oceanography & Fisheries 16604 Athens	Bioaccumulation du mercure et d'autres métaux dans l'écosystème (A.V. CATSIKI, 3000)	FAO
ISR 11 Chemical Oceanography & Marine Pollution, IO & L. Res. Haifa	Some aspects of the biogeochemical cycle of mercury in a polluted area off the Israel Mediterranean coast (B.S. KRUMGALZ, 3000)	FAO
ITA 25 Inst. Anatomia Comparata Univ. Siena, Siena	Biogeochemical cycle of mercury and selenium (including marine resident and migratory birds) (A. RENZONI, 2500, 2500, 2000)	FAO
SPA 06 Dept. de Microbiología, Facultad de Ciencias Univ. de Málaga	Survival of pathogens microorganisms in the sea-waters (P. ROMERO RAYA, 4500)	WHO

Activity 'K' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
TUN 03 Inst. Pasteur Tunis	Survie des entro-bactéries pathogènes (Salmonella), des Vibrions (NAG vibrions et vibrions parahémolyticus) et des germes marqueurs de pollution fécale (Coliformes et Streptocoques fécaux) en relation avec certains facteurs physico-chimiques (pH, température, salinité, oxygène dissous DBO ₅ , DCO du milieu marin) (S. JEKOV, 2350, 2000)	WHO
TUR 03 Marine Sc. Inst. METU, Erdemli	Biogeochemical cycle of Mercury in the North-eastern Mediterranean - Southern coast of Turkey (I. SALIHOGLU, 2000, 2500, 2000)	FAO
TUR 09 Inst. Marine Sc. 9 Eylül Univ. Bornova/Izmir	Pollutant transfer process and biogeochemical cycles of specific pollutants at the selected location of Candarli Gulf, Turkey (E. IZDAR, 2800, 2500, 2000)	FAO
YUG 11 Center for Marine Research Rudjer Boskovic Institute, Zagreb	Anthropogenic influence on the distribution and fluxes of lead species into the marine environment (M. BRANICA, 4000)	IAEA
YUG 20 Rud.Boskovic Inst. Rovinj	Survival of some intestinal pathogens in the marine environment (D. FUKS, 3000, 3000, 3000)	WHO
YUG 22 Inst. Biological & Medical Invest. of SR Montenegro, Titograd; Dept. of Marine Biology and Oceanography, Kotor; and Inst.Boris Kidric - Vinca Belgrade	Accumulation and Transport of Radionuclides in the Biota of the South Adriatic Region (N. AJDACIC, 2000)	IAEA

Activity 'L' : Pollutant-transfer processes

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
EEC 01 Commission des C.E. Centre Commun de Rechercher, Ispra	Etude du transport côtier de la pollution (P. FRAYSSE, nil)	IOC
EGY 08 Univ. Alexandria Research Centre P.O. Box 832, Alex.	Pollutant Transfer Processes (M.F. MACKLAD, 5100)	IOC
FRA 05 C.N.R.S. Gif-sur-Yvette	Air/sea and water column metallic pollutant transfer in the Mediterranean Sea (P. BUAT-MENARD, nil)	IAEA/WMO
FRA 07 Univ. Perpignan Perpignan	Rôle des couches néphéloïdes et des colloïdes organiques dans le transport des métaux lourds (Pb, Cd, Cu, Zn) du milieu estuarien au milieu marin. Exemple du Rhône (A. MONACO, 9900)	IOC
GRE 04 Univ. of Athens 13A Navarinou St. Athens	Study of the transport of particles (measurement of the flux of particles from surface coastal and estuarine waters; use of particle interceptor traps) (M.J. SCOULLOS, 6800, 3500)	IOC
GRE 19 Dept. of Geology Univ. of Patras Patras	River plume dispersion into coastal waters (G. FERENTINOS, 6000)	UNESCO
ITA 03 Facolta Chimica Industriale Calle Larga S. Marta, 2137 30123 Venezia	Textural and mineralogical characters and role in the pollution processes of bottom sediments in the Northern Adriatic Sea (O. HIEKE MERLIN, 5000)	IAEA

Activity 'L' : Continued

RESEARCH CENTRE	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE PROVIDED OR COMMITTED IN US \$	CO-OPERATING AGENCY
ITA 14 Ist. di Zoologia Facolta di Scienze V. dell'Università 12 - 43100 Parma	Study on the ^{137}Cs and ^{239}Pu fluxes into Mediterranean marine environment (L. TASSI PELATI, 4000)	IAEA
ITA 16 Water Quality Br. CNR Rome	Study of factors controlling the fate and effects of some pollutants carried out from the Tiber river to the sea (T. LA NOCE, nil)	IOC
ITA 32 Gruppo Ric. Ocean. Istituto di Chimica Generale 16132 Genova	Chemistry and dynamics in the transport of heavy metals in particulate matter in Ligurian and Tyrrhenian sea (R. FRACHE, 5000)	IAEA
ITA 37 Ist. di Chimica Generale ed Inorganica, Calle Larga, S.Marta 2137 30123 Venezia	Transport mechanism of pollutants at the sediment-water interface (A.A. ORIO, 9600)	IOC
ITA 41 Osservatorio Meteo- logico di Brera 20121 Milan	Transport of heavy metals into Mediterranean Sea (G. CLERICI, 8500)	WMO
YUG 10 Center for Marine Research Rudjer Boskovic Inst., Zagreb	The role of sediments and suspended matter in the transfer of selected pollutants in the Northern Adriatic Basin (V. PRAVDIC, 4000)	IAEA
YUG 29 Centre for Inter- Republic and Inter- national Programme and Development Federal Hydro- meteological Inst. Belgrade	Preliminary study of potential long-range cadmium transport from major identified sources in Europe into Mediterranean region (Z.I. JANJIC, 9500)	WMO

Ongoing jellyfish projects

COUNTRY Address of Laboratory	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE RECEIVED IN UN \$
FRANCE 11 Museum National d'Histoire Naturelle Univ. Pierre et Marie Curie 06230 Villefranche-sur-Mer	Modélisation des floraisons de méduses dans une zone d'Eutrophisation en mer Ligure (J. GOY, 9300)
12 Inst. National de la Santé et de la Recherche Médicale I.N.S.E.R.M. 101, rue de Tolbiac F-75654 Paris Cédex 13	Surveillance des proliférations de méduses urticantes durant la période estivale 1985 sur le littoral de la région Provence- Alpes-Côte d'Azur (P. BERNARD, nil)
GREECE 11 Poison Control Center Children's Hospital "P.A. Kyriakou" Goudi, 15227 Athens	Epidemiology and therapeutic methods of jellyfish poisoning in Greece (P. VLACHOS, 2500)
12 School of Chemistry Laboratory of Food Chemistry Univ. of Athens Navarinou 13A, 10680 Athens	Isolation and identification of new molecules phosphonolipids in jellyfish (S. MASTRONICOLIS, 4500)
21 Dept. of Hydraulics School of Technology Aristotle Univ. Thessaloniki	Hydrodynamic study of the coastal transport of jellyfish (S. GANOULIS, 3000)
24 Institute of Oceanographic and Fisheries Research Aghios Kosmas, Hellinikon Athens 16604 Combined with GRE 28	Studies on the ecology and biology of jellyfish in Greece (E. PAPATHANASSIOU, 12150)
28 Nuclear Research Center "Demokritos" Aghia Paraskevi, Attikis Athens	Use of isotopes to identify the food sources of jellyfish blooms: natural marine ecosystems or sewage effluents (A.P. GRIMANIS)
25 Laboratoire de Zoologie Université d'Athènes Panepistimioupolis 15771 Athènes	Distribution quantitative et qualitative des méduses communes dans les zones proches de la côte des îles Hydra, Poros et aussi au N.E. du golfe de Korinth (J. CASTRITSI-CATHARIOS, 3800)

Ongoing jellyfish projects: Continued

COUNTRY Address of Laboratory	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE RECEIVED IN UN \$
ITALY 42, 43, 44, 45, 46, 47, 51,	are combined with assistance of US \$ 6000
42 CIMAM-Laboratoire de Biologie Marine A. Valerio N° 32 Trieste	Monitorage des méduses en Adriatique et dommage à la pêche (L. ROTTINI-SANDRINI)
43 CIMAM-Laboratoire de Biologie Marine A. Valerio N° 32 Trieste	Etude écologique experimental de <u>Pelagia noctiluca</u> (L. ROTTINI-SANDRINI)
44 CNR, Istituto Talassografico di Trieste Viale Romolo Gessi 2 34123 Trieste	Water circulation and transport in NE Adriatic "TRA NE A" (F. STRAVISI)
45 CNR, Istitute Talassografico di Trieste Viale Romolo Gessi 2 34123 Trieste	Study on the climatic variations in Northern Adriatic during the last century and their role on marine phenomena "NA CLI" (F. STRAVISI)
46 Institute of Pharmacology and Pharamcognosy Section for Pharmacognosy Univ. of Trieste Via Valerio 32 34100 Trieste	Individuation and Toxicological Evaluation of the Dermatotoxic principles of <u>Pelagia noctiluca</u> and other medusae (R. DELLA LOGGIA)
47 Ist. di Clinica Dermatologica dell'Univ. di Trieste c/o Nuovo Ospedale Strade di Fuime Trieste/Cattinara	Study on the histology and on the local treatment of human skin injuries from jellyfish stings (C. SCARPA)
51 Faculty of Sciences Ist. di Mineralogia e Petrografia, Lab. di Geochimica isotopica Piazzale Europa, 1 34100 Trieste	Stable istotope research ($^{18}\text{O}/^{16}\text{O}$, D/H and $^{13}\text{C}/^{12}\text{C}$) as a new tool for studying the relationships between some environmental parameters and the behaviour of jellyfish (A. LONGINELLI)

Ongoing jellyfish projects: Continued

COUNTRY Address of Laboratory	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE RECEIVED IN UN \$
48 Ist. di Scienze Ambientale Marine Università di Genova Via Balbi 5 16126 Genova	Sample-monitoring of <u>Pelagia noctiluca</u> in the Ligurian Sea: biological and ecological aspects (A. CARLI, 1500)
49 2nd Cattedra di Chimica Generale, Facoltà di Farmacia, Univ. di Catania Ist. Dipart. di Chimica Viale A. Doria 8 95125 Catania	Multi-element analysis of Mediterranean sea-waters and assessment of environmental quality in relation to jellyfish swarmings, and structure characterization of chemical components of venom produced by <u>Pelagia noctiluca</u> (G. C. PAPPALARDO, 1500)
50 Ist. di Fisiologica Generale Univ. di Messina	Discharge mechanism of the nematocysts of <u>Pelagia noctiluca</u> (A. SALLEO, 1500)
MALTA 03 Biology Section Maths and Science Dept. Univ. of Malta Msida	Monitoring of jellyfish swarmings in the coastal waters of Malta (V. AXIAK, 6000)
SPAIN 7 U E.I. Recursos Inst. de Investigaciones Pesqueras Barcelona	Distribution and abundance of jellyfish in the Catalan Coast (May-September 1984) (A. CASTELLON MASALLES, 3000)
YUGOSLAVIA 30 Biological Institute P.O. Box 39 50000 Dubrovnik	Investigation of jellyfishes (medusae) in the Southern Adriatic (A. BENOVIC, 7450)
32 Center for Marine Research Rudjer Boskovic Institute P.O. Box 1016 41001 Zagreb	Swarming and transport of <u>Pelagia noctiluca</u> in the Adriatic Sea (T. LEGOVIC, 4000)

Ongoing jellyfish projects: Continued

COUNTRY Address of Laboratory	TITLE OF PROJECT, NAME OF PRINCIPAL INVESTIGATOR AND ASSISTANCE RECEIVED IN UN \$
34 Medical Center Put Marsala Tita 61 5000 Dubrovnik	Investigation of medical effects of jellyfish on humans in the region of Dubrovnik (B. CEZAREVIC, 500)
35 Medicinski Centar Pula 52000 Pula Zagrebacka 36	<u>Pelagia noctiluca</u> - Human health aspects (Z. MARETIC, 600)
39 Center for Marine Research Rudjer Boskovic Inst. Ulica Giordano Paliaga 5 52210 Rovinj	Monitoring of the jellyfish <u>Pelagia noctiluca</u> along the west Istrian Riviera (Northern Adriatic) (D. ZAVODNIK, 7500)
42 Dept. of Biology Inst. of Oceanography and Fisheries, POB 114 58000 Split	Comparative study of the unusual appearance of <u>Pelagia noctiluca</u> and changes of the environmental factors (T. VUCETIC, 2000)
44 Institute of Biology Univ. Evard Kardelj 61000 Ljubljana Askerceva 12	Cytolytic toxins from jellyfish; <u>Pelagia noctiluca</u> , <u>Cotylorhiza tuberculata</u> (B. SEDMAK, 2700)
45 Institute of Biology Univ. E. Kardelj 61000 Ljubljana Askerceva 12	Rates of metabolism of jellyfish as related to body weight, chemical composition and temperature (A. MALEJ, 5850)
MED TERRA/GRE-27 Ministry of Physical Planning, Housing and Environment Pouliou 17, Ambelopiki Athens	Data collection/dissemination and support of research on medusae in the Mediterranean (A. DAVAKIS, 5000)
CIMAM Trieste, Italy	Organization of training, fellowships and workshops (L. ROTTINI-SANDRINI, 7000)

Annex VI

National contributions to the jellyfish programme
(Summary workplan for 1984)

FRANCE

The French programme (Goy, FRA/11); Bernard, FRA/12) proposes an approach which includes monitoring, laboratory research and modelling.

1. In the Ligurian Sea, (Goy, FRA/11), the swarms of jellyfish will be monitored and their vertical and horizontal movements followed. The presence of the ephyrae will be also recorded in the daily plankton catches. All data coming from the monitoring will be compared with historical data available at Zoological Station of Villefranche since 1896. On the basis of the data collected, the number of generations per year and the growth rate of Pelagia noctiluca will be determined. Bernard (FRA/12) will collect and analyse summer data gathered in the region Provence-Alpes-Côte d'Azur by scuba divers through the use of questionnaires which include biological, physical and medical parameters as well as general information.
2. All the hydrological, chemical and biological changes in the environment preceeding or accompanying the blooms of jellyfish will be recorded and correlated to climatological fluctuations, (Goy, FRA/11). During the blooms of jellyfish, other abundant zooplankton species will be noted and recorded.
3. In the laboratory (Goy, FRA/11), a study of the growth of Pelagia noctiluca will be carried out under controlled nutritional conditions; also the inhibiting or stimulating effects of controlled chemical factors to the growth of Pelagia noctiluca will be studied as well as the lethal conditions of temperature, salinity, etc. In addition, in analogy with other species of jellyfish, the hypothesized resting stage of Pelagia noctiluca will be checked experimentally.
4. A model will be developed (Goy, FRA/11), which will enable the forecasting of massive presence of Pelagia noctiluca. The model will take into account:
 - determination of blooms as a qualitative phenomenon;
 - population dynamics of Pelagia noctiluca, and,
 - simulation of an ecosystem which will include jellyfish and other carnivores.

GREECE

1. Information from non-scientific sources (port authorities) on occurrence of jellyfish are to be gathered and analysed by Papathanassiou (GRE/24) through the use of questionnaires. Ganoulis (GRE/21) is proposing a review of relevant studies and observations of coastal transport of jellyfish in the Mediterranean.
2. Systematic sampling of phyto- and zooplankton including jellyfish is carried out in Saronikos Gulf and in South Evoikos Gulf (Papathanassiou, GRE/24) and is further proposed in the Korinthiakos Gulf (Castritsi-Catharios, GRE/25) and in the Cyclades (Papathanassiou, GRE/24); physical and chemical data up to 100 m (salinity, temperature, currents and nutrients) will be also collected (Papathanassiou, GRE/24; Castritsi-Catharios, GRE/25 and Grimanis, GRE/28).
3. Papathanassiou (GRE/24) and Castritsi-Catharios (GRE/25), in addition to the biological sampling, propose the gathering of some physical parameters.
4. A number of basic biochemical/nutritional experiments are proposed to be carried out by Mastronicolis (GRE/12). Experiments on the biology of jellyfish (behaviour, nutrition, movements in relation to food availability and physical and chemical parameters, reproduction) are proposed by Papathanassiou (GRE/24). The use of isotopes to identify the food sources and, as a result, the relation between swarms of jellyfish and pollution, is proposed by Grimanis (GRE/28).
5. Ganoulis (GRE/21) proposes the development of models to be applied in all the monitored areas, and in particular:
 - description of the hydrodynamic transport of individual medusae;
 - comparison of various mathematical models for the transport of swarms;
 - study of horizontal movements with 2-D model, and,
 - extension in 3-D space and modelling various methods to combat blooms of jellyfish.
6. Vlachos (GRE/11) proposes a) an analysis of cases of jellyfish stings referred to the Poison Centre during the last three years; b) evaluation of therapeutic methods, and c) registration of cases in 1984.

ITALY

1. Four seasonal cruises are planned in the Adriatic (Rottini-Sandrini, ITA/42) during 1984 in the framework of the activity of the Laboratory of marine biology and fishery in Fano, (C. Piccinetti); the cruises will also be used to observe the presence of jellyfish swarming and to sample specimens of larvae and adults for laboratory work. Pappalardo (ITA/49) also proposes systematic observations of areas around Sicily and Carli (ITA/48) in the Ligurian Sea.
2. Searching and analysis of all marine meteorological data for the Gulf of Trieste are proposed by Stravisi (ITA/45). Stravisi (ITA/44) also proposes direct current measurements in the Gulf of Trieste (Eulerian vertical velocity profiles and surface film dynamics by lagrangian observations), including statistical analysis of current velocity data and correlations with meteorological parameters, and a quantification of the transport of water, heat, salt and other conservative tracers through the opening of the Gulf of Trieste.
3. Rottini-Sandrini is continuing the studies on the biological cycle of Pelagia noctiluca (ITA/42 and ITA/43). Correlations between physical, biological and other environmental conditions including the presence of specific pollutants and jellyfish growth are proposed by Rottini-Sandrini (ITA/42 and ITA/43), Pappalardo (heavy metals) (ITA/49) and Carli (ITA/48). A number of physiological, biochemical and histological laboratory research on jellyfish are proposed by Rottini-Sandrini (ITA/43), Pappalardo (ITA/49) and Carli (ITA/48).
4. Pappalardo (ITA/49) proposes the development of a simple model to predict jellyfish swarms in coastal zones.
5. Rottini-Sandrini proposes to continue the collection and analysis of data on the damage of massive presence of jellyfish on fishery (ITA/42) and Carli (ITA/48) proposes the study of prey/predator relationship between fish and jellyfish.
6. Salleo (ITA/50) proposes to study the mechanism of discharge of the nematocysts of Pelagia noctiluca. In particular, experiments will be performed on isolated capsules as well as on cnidoblasts, in order to clarify the transduction of the stimulus.
7. Della Loggia (ITA/46) proposes to study the characterization of the dermatotoxicity of Pelagia noctiluca and other medusae, with the aim of getting rational therapeutic suggestions, and Scarpa (ITA/47) will study the comparison between the effects of bromelin ointment and old-fashioned local treatments (ethanol, ammonia, sodium dicarbonate) on skin injuries. Pappalardo (ITA/49) will work on the composition of jellyfish venom, with separation, purification and structural characterization of each component.

MALTA

1. A network of voluntary observers to report sightings of jellyfish swarms has been set up and questionnaires prepared. It includes seaside hoteliers, fishermen, local divers, etc....
2. A review of literature and interviews with local fishermen will be made to determine whether such blooms occurred in the past 50 to 100 years, and if so, to determine approximate dates.
3. Monthly plankton sampling for medusae and ephyrae at fixed coastal water stations (at least one) will be carried out together with monitoring of usual environmental parameters (temperature, salinity, illumination profile, nutrient levels, etc...) at such stations, according to the UNEP methodological manual.
4. Shore stranding counts and sight counts at fixed coastal stations (at least three) following methods indicated in UNEP methodological manual, will be carried out regularly.
5. In situ studies of vertical distribution of jellyfish will be made by direct visual observations by divers at different time of day. Such observations will be recorded by underwater photographic and video equipment.

SPAIN

1. Five cruises will be carried out during 1984 in the Catalan Sea (Castellon, SPA/7). In addition to the monitoring and sight counts of jellyfish, phyto- and zooplankton populations will be concurrently sampled and analysed. Semi-commercial trawling of demersal fish will be carried out as well. Surface and vertical temperature and salinity, tc. will be determined.
2. The size and wet weight of jellyfish will be determined as well as the stomach contents of the captured jellyfish and fish in order to study their role as food competitors.

TURKEY

1. The Institute of Marine Science (METU) at Erdemli is proposing to monitor jellyfish swarmings at selected stations to obtain continuous data on occurrence. Data physical and chemical parameters such as temperature, salinity and turbidity will be obtained as supplementary information.
2. In addition, an attempt will be made to search information on jellyfish in the local press (if available) for the last 10 years.
3. The Gulf of Mersin is the selected sampling site because of its large continental shelf, sandy bottom, river and industrial inputs and the reported occurrence of jellyfish blooms. Material will be collected within an area of five nautical square miles. Maximum depth in the area is 100 m.
4. The overall sampling frequency is monthly. During the time periods of expected swarming of jellyfish (March-September) the sampling periodicity will be biweekly.
5. For the sampling of jellyfish a net with $1m^2$ mouth opening will be used.
6. At each sampling station a vertical and a horizontal haul of 10-20 minutes will be carried out. The total catch will be determined and sorted out according to the species. The total weight of each species will be recorded and the diameters of the individuals will be measured to the lower mm group.
7. At each sampling station the salinity, DO, and the temperature will be measured at standard depths. In addition, the same parameters will also be recorded for the depths where the jellyfish sampling net is to be operated. Samples for chlorophyll-a measurements will be taken with Nansen bottles at standard depths. Parameters such as wind speed and direction, air pressure, the cloud cover, the sea state, the light penetration in the water column and the Secchi disc will be recorded.
8. For the sampling of jellyfish, a small research trawler (R/V LAMAS) of 16 m. length, equipped with trawl and hydrographic winch, radar, echo sounder etc. will be used.

YUGOSLAVIA

1. Information on occurrence of jellyfish from non-scientific sources using questionnaires is to be collected at:

- West coast of Istrian peninsula:
 - Slovenian part by Malej (YUG/44)
 - Croatian part by Zavodnik (YUG/39)
- Middle and South East coasts of Adriatic Sea:
 - Croatian part by Benovic (YUG/30)

The above information will show when, where and how abundant jellyfish are around the eastern coast of the Adriatic Sea. These data will be used to estimate the impact of jellyfish on tourism and partly on fisheries.

2. Systematic sampling of jellyfish together with hydrography, phyto- and zooplankton are carried out at:

- one station off Piran (west Istrian coast), monthly (Malej, YUG/44);
- one station off Rovinj, monthly, and in the summer season, bi-weekly (Zavodnik, YUG/39);
- three stations off Split, monthly, and two stations at the open water of Middle Adriatic, seasonally, (Vucetic, YUG/42);
- three stations off Dubrovnik monthly, plus monitoring of swarms by scuba divers (Benovic, YUG/30);
- 66 stations during Italian-Yugoslav cruises, twice a year (Vucetic, YUG/42), and,
- three stations between Split and Mount Gargano, seasonally (Vucetic, YUG/42).

The information collected will detect the presence of different developmental stages of jellyfish as well as giving information on prevailing hydrographic conditions. At the same time abundance of phyto- and other zooplankton will be quantified in the areas where an eventual shift in the distribution toward jellyfish is expected.

Historical information on sampling of zooplankton will be searched and analysed (Vucetic, YUG/42). These results will serve to put the phenomenon into historical perspective and answer the question of whether the fluctuations are recent or may have appeared earlier, unnoticed.

3. Available hydrodynamical data (surface and subsurface currents) from recent years will be studied together with hydrographic parameters (Vucetic, YUG/42); Legovic, YUG/32).

4. Functional, morphological and histological studies will be performed (Malej, YUG/45); furthermore behavioural experiments (light intensity, temperature) are to be carried out (Benovic, YUG/30) as well as feeding behaviour studies (Zavodnik, YUG/39). This activity will answer questions on the time length of reproductive cycle and how this is modified by environmental conditions and composition of food.
5. Preparation of conceptual models for the explanation of the transport of jellyfish and the preparation of simple ecological models explaining stability of swarms will be carried out (Legovic, YUG/42).
6. Although there are no specific proposals to assess damages caused by blooms of jellyfish on fishery, whenever possible data and information will be collected under 1. and 2. (Vucetic, YUG/42).
7. Information on epidemiology and clinics will be gathered through questionnaires and personal records by Maretic (YUG/35) and through personal records by Cezarevic (YUG/34). Pathological and cytological analysis of skin after stings will be performed. Laboratory experiments on guinea pigs are proposed by Maretic. Laboratory analysis of substances that inhibit venom activity will be carried out (Sedmak, YUG/44). By a mass media education (lectures, television and radio programmes, booklets) it is hoped to improve the first aid and treatment of stung individuals.

CIMAM (Trieste, Italy)

1. The recently established National Centre in Trieste, CIMAM, will host scientists from other institutes to carry out joint laboratory research, and invite scientists to attend small consultation meetings. During 1984, a workshop was held in September, and training was organized for foreign scientists.

MED TERRA (Athens, Greece)

1. The Greek Centre MED TERRA, (Davakis, GRE/27) will carry out literature searches and will facilitate exchange of relevant scientific information between participating laboratories. The Centre will deliver documents of the library's collection as well as those obtained throughout the world. A bibliography on the subject of jellyfish will also be compiled.

Annex VII-

Trainees and fellowships

I. On-job training and scientific visits

Scientists and institutions	Dates and institutions of training	Purpose of training/visit
<u>CYPRUS</u>		
P. Loizidou Fisheries Department Nicosia	5 - 19 June 1984 Rudjer Boskovic Institute Zagreb	Analysis of chlorinated hydrocarbons
<u>GREECE</u>		
E. Papathanassiou Institute of Oceanographic & Fisheries Research Athens	20 Aug. - 8 Sept. 1984 CIMAM Italy	Biochemical studies on <u>pelagia noctiluca</u> , including culture methodology
<u>LEBANON</u>		
Mr. Elie Najjar Marine Research Center Jounieh	6 - 13 October 1984 ILMR Monaco	Pesticide analysis
Ms. Mary Tilbian Marine Research Center, Jounieh	6 - 13 October 1984 ILMR Monaco	Heavy metals analysis
<u>MALTA</u>		
V. Axiak University of Malta Msida	14 - 19 August 1984 CIMAM Trieste Italy	Biochemical studies on <u>pelagia noctiluca</u> , including culture methodology
<u>MOROCCO</u>		
Two technicians Institut National d' Hygiène (INH) B.P. 769 Rabat	Two weeks (approved, but not yet implemented)	Microbiology
Principal investigator Institut Scientifique des pêches Maritimes (ISPM) B.P. 21 Casablanca	Two weeks (approved, but not yet implemented)	Analysis of pollutants in sediments and petroleum hydrocarbons

Scientists and institutions	Dates and institutions of training	Purpose of training/visit
An investigator (ISPM)	One month (approved, but not yet implemented)	Analysis of organochlorines
Two laboratory technicians Institut National Agronomique et Vétérinaire Hassan II (INAV) Rabat-Agdal	Two weeks (approved, but not yet implemented)	
Two investigators (INAV)	One month (approved, but not yet implemented)	
An investigator Ecole Mohammadia d'Ingénieurs (EMI) B.P. 765 Rabat	One month (approved, but not yet implemented)	Sampling and analysis of waste waters
An investigator (EMI)	One month (approved, but not yet implemented)	Sampling of sediments and analysis of organochlorines
<u>YUGOSLAVIA</u>		
R. Planinc Marine Research and Training Centre Piran	11 June - 10 July 1984 ILMR Monaco	On specific techniques for the analysis of high molecular weight halogenated hydrocarbons
D. Degobbi Center for Marine Research "Rudjer Boskovic" Institute Rovinj	10 January - 10 April 1984 University of Venice Venice Italy	On exchange rates between water and sediments
D. Bazulic Center for Marine Research "Rudjer Boskovic" Institute Rovinj	10 January - 10 April 1984 University of Venice Venice Italy	On nutrient fluxes through the sediment-water interface in laboratory model systems
D. Vilicic Biological Institute Dubrovnik	30 June to 14 July 1984 aboard Italian M/S Tiepolo cruise in Adriatic	On ichthio and zooplankton sampling related to jellyfish

Scientists and institutions	Dates and institutions of training	Purpose of training/visit
P. Tusnik Marine Research and Training Centre Piran	10 - 24 June 1984 ILMR Monaco	On fluorimetric detection of petroleum hydrocarbons
V. Dadic Institute of Oceanography and Fisheries Split	11 - 22 June 1984 Thessaloniki University Dept. of Hydraulics Thessaloniki Greece	On the development of hydrodynamical models and field current measurements
M. Gacic Institute of Oceanography and Fisheries Split	11 - 22 June 1984 Thessaloniki University Dept. of Hydraulics Thessaloniki, Greece	On the development of hydrodynamical models and field current measurements
V. Zutic Center for Marine Research "Rudjer Boskovic" Institute Zagreb	10 Sept. - 9 October 1984 University of Perpignan Perpignan France Ecole Normale Supérieure Laboratoire de Geologie Paris France	On measurement and interpretation of estuarine parameters
T. Legovic Rudjer Boskovic Institute Zagreb	30 Aug. - 8 Sept. 1984 CIMAM Trieste Italy	Mathematical models applied to jellyfish
T. Legovic Rudjer Boskovic Institute Zagreb	10-20 December 1984 CIMAM Trieste Italy	Collection of data (20 years) on fishery distri- bution of <u>Pelagia</u> predators
A. Malej Inst. of Marine Biology Portoroz	10-15 December 1984 CIMAM Trieste Italy	Study on isotopic content of 12 C and 13 C in <u>Pelagia</u>

II. Attendance at scientific meetings

a. UNEP Working Group on the Blooms of Jellyfish in the Mediterranean, Athens, 31 October - 4 November 1983

M. Aubert, France	V. Axiak, Malta
M. Belkhir, Tunisia	A. Benovic, Yugoslavia
D. Cargo, U.S.A. ^{1/}	N. Dowidar, Egypt
J. Goy, France	H. Idrissi, Morocco
T. Legovic, Yugoslavia	J. Makjanic, Yugoslavia
A. Malej, Yugoslavia	Z. Maretic, Yugoslavia
H. Möller, W. Germany ^{1/}	G. Pappalardo, Italy
A. Renzoni, Italy	L. Rottini-Sandrini, Italy
F. Stravisi, Italy	T. Theoharidis, U.S.A.
T. Vucetic, Yugoslavia	C. Scarpa, Italy
R. Della Loggia, Italy	F. Wilkerson, U.S.A. ^{1/}
J. Ganoulis, Greece	P. Bernard, France
A. Vukovic, Yugoslavia	B. Ozretic, Yugoslavia

b. WHO/UNEP First Intercalibration exercise and Consultation Meeting on microbiological methods for Coastal water quality monitoring Barcelona, 7-11 November 1983

F.B. Bá, Sénégal, ^{1/}	P. Bernard, France,
E. Chamekh, Algeria	K. Djambara, Côte d'Ivoire, ^{1/}
J. Semeria, Monaco,	S. Jekov, Tunisia

c. UNEP Consultation Meeting on a Jellyfish Project in the Mediterranean Sea, Athens, 6 - 7 February 1984

J. Ganoulis, Greece	L. Rottini-Sandrini, Italy
V. Axiak, Malta	A. Benovic, Yugoslavia
T. Legovic, Yugoslavia	

d. Workshop on Thermal Pollution, Primosten, 14 - 15 May 1984

U. Unluata, Turkey

e. Workshop on the Chemistry of the Mediterranean Sea, Primosten, 16 - 24 May 1984

N. Frilingos, Greece*	M. Scoulllos, Greece*
U. Unluata, Turkey**	J. Biscan, Yugoslavia
M. Juracic, Yugoslavia	

1/ Sponsored by RS/PAC of UNEP

* Received D.S.A. only

** Received travel and 20% D.S.A. only

f. FAO/UNEP/IAEA Consultation Meeting on Reference Methods for the Determination of Chemical Contaminants in Marine-Organisms Rome, 4-8 June 1984

E. Bacci, Italy	R. Capelli, Italy
A. Habib, Tunisia	B. Krumgalz, Israel
A. Muezzinoglu, Turkey	J. Obiols, Spain
M. Picer, Yugoslavia	G.C. Pappalardo, Italy
I. Salihoglu, Turkey	Y. Thibaud, France
L. Reutergardh, Sweden	U. Fossato, Italy
S. Focardi, Italy	P. Michel, France

g. WHO/UNEP Second Intercalibration exercise and Consultation Meeting on Coastal water quality monitoring, Athens, 25 - 29 June, 1984

S. Bokan, Yugoslavia	E. Ioannou, Cyprus
N. Krstulovic, Yugoslavia	A. Mates, Israel
F. Portelli, Malta	A. Yilmaz, Turkey
Y. Yoshpe-Purer, Israel	

h. Symposium on Environmental Management for Developing Countries, Istanbul, 25 - 31 July 1984

K. Fytianos, Greece	A. Mourmouris, Greece
---------------------	-----------------------

i. FAO/UNEP/WHO/IOC/IAEA Biogeochemical Cycle of Mercury in the Mediterranean, Siena, 27 - 31 August 1984

O. Aboul Dahab, Egypt	G. Copin-Montégut, France */
H. Hornung, Israel	Jean-Marie Martin, France
H.H. Saleh, Egypt	I. Salihoglu, Turkey
I. Vukadin, Yugoslavia	D. Zafiroopoulos, Greece

j. WHO/FAO/UNEP Meeting on biological monitoring of methylmercury in Mediterranean populations, Zagreb, 17 - 21 September 1984

C. Alzieu, France	R. Capelli, Italy
N. Egoz, Israel	L. Kosta, Yugoslavia
S. Nakou, Greece	A. Polychronopoulou-Trichopoulou, Gr.
A. Renzoni, Italy	M. Riolfatti, Italy
G. Tomassi, Italy	A. Dahab, Egypt

*/ D.S.A. only

k. VII ICSEM/IOC/UNEP Workshop on Pollution of the Mediterranean Sea Lucerne, 11 - 13 October 1984

M. Apostolopoulou, Greece	O. Aboul Dahab, Egypt
R.R. Abdallah, Egypt	J. Castritsi-Catharios, Greece
J. Dujmov, Yugoslavia	N. Dowidar, Egypt
O.A. El-Rayis, Egypt	I.H. El-Sokkary, Egypt
B. Fattal, Israel	N. Friligos, Greece
A. Catsiki, Greece	D. Zafiropoulos, Greece
E. Papathanassiou, Greece	A. Mourmouris, Greece
D. Fuks, Yugoslavia	C.F. Gokcay, Turkey
A.A. Haritos, Greece	H. Hornung, Israel
B. Krumgalz, Israel	A. Kokatas, Turkey
B. Kurelec, Yugoslavia	A. Lambrini, Morocco
I. Munda, Yugoslavia	M. Juracic, Yugoslavia
S. Jekov, Tunisia	J. Pavicic, Yugoslavia
V. Pravdic, Yugoslavia	C. Papaconstantinou, Greece
F. Voutsinou, Greece	S.P. Varnavas, Greece
I. Vukadin, Yugoslavia	M. Vassilaki, -Grimanis, Greece
A. Yilmaz, Turkey	S.D. Wahby, Egypt
Y. Yoshpe-Purer, Israel	A. Cruzado, Spain
V. Zutic, Yugoslavia	L. Athanasiades, Cyprus
A. Laskaratos, Greece */	

l. Meeting on the cooperation of the Mediterranean countries, Venice, 20 - 27 October 1984

A. Mourmouris, Greece 1/

m. FAO/UNEP Meeting on Toxicity and Bioaccumulation of selected substances in marine organisms, Rovinj, 5 - 9 November 1984

P.D. Abel, Greece	A. Balci, Turkey
M. Belkhir, Tunisia	J. Castritsi-Catharios, Greece
A.V. Catsiki, Greece	L. Dalla Venezia, Italy
O. El-Rayis, Egypt	A.H. El-Sebae, Egypt
M.J. Gasic, Yugoslavia	M. Moraitou-Apostolopoulou, Greece
E. Papathanassiou, Greece	H.H. Saleh, Egypt
M. Tudor, Yugoslavia	M. Tusek-Znidaric, Yugoslavia
M. Unsal, Turkey	M. Vighi, Italy
R. Zahn, FRG <u>2/</u>	

*/ D.S.A. only

1/ Attendance in conjunction with ICSEM/IOC/UNEP Workshop

2/ Sponsored by RS/PAC

n. IOC/UNEP Intercalibration exercise of petroleum hydrocarbon analytical methods, Barcelona, 12 - 16 November, 1984

Balci, Turkey
Bouloumbassi, Greece
Saliot, France
Picer, Yugoslavia
Golik, Israel
Franco, Spain

Saydam, Turkey
Mimicos, Greece
Dujmov, Yugoslavia
El Mehrik, Libya
Hanna, Egypt

o. FAO/UNEP Third Intercalibration exercise and Consultation Meeting on Coastal water quality monitoring, Tunis, 12 - 16 novembre 1984

A. Belemlih, Morocco
L. Idrissi, Morocco
N. Krstulovic, Yugoslavia
C. Skabic, Yugoslavia
M.M. Valente, Portugal 3/

B. Carcasonne, France
M. Jabry, Morocco
A. Nejjar, Morocco
J. Monteiro Ferereiro, Portugal 3/

Annex VIII

Technical assistance by visits of staff
(secretariat and co-operating agencies) and consultants/experts

State	Date	Staff as expert/consultant
ALGERIA		
Algiers	4 - 30 November 1983	P. Ahn, UNEP Consultant S.W. Fowler, IAEA R. Buscaren, UNEP Consultant
Algiers	18 - 20 November 1983	A. Cruzado, UNEP
Algiers	29 - 30 November 1983	A. Cruzado, UNEP
CYPRUS		
Nicosia	1 - 16 October 1984	Th. Kouimtzis, UNEP Consultant
EGYPT		
Alexandria/Cairo	17 - 21 February 1984	L.J. Saliba, WHO
ITALY		
Siena	12 - 17 March 1984	G.P. Gabrielides, FAO
S. Margherita	5 July 1984	A. Cruzado, UNEP F.S. Civili, UNEP
Siena, Pisa	29 - 30 August 1984	L.J. Saliba, WHO
Rome	15 - 16 November 1984	F.S. Civili, UNEP
SPAIN		
Valencia	27 - 29 June 1984	A. Cruzado, UNEP
SYRIA		
Damascus, Latakia	7 - 12 October 1984	L.J. Saliba, WHO
TUNISIA		
Tunis	11 - 13 June 1984	L.J. Saliba, WHO
YUGOSLAVIA		
Rovinj	17 - 20 March 1984	G. P. Gabrielides, FAO
Primosten	14 - 15 May 1984	A. Cruzado, UNEP

Annex IX

Maintenance services provided to MED POL participants

Institute	Dates	Instruments
ALGERIA		
Institut des Sciences de la mer et de l'aménagement du littoral (ISMAL) Alger	10-16 December 1984	Service of VARIAN AAS, GC, paper chart recorders and H.P. 85 computer
MOROCCO		
Institut Scientifique des Pêches Maritime Casablanca	24 - 26 April 1984	Emergency service of Varian AAS, GC, and two chart recorders
Institut National Agronomique et Vétérinaire Hassan II Rabat	27 April 1984	Assessment of state of the analytical instrumentation
Office National de l'Eau Potable (ONEP) (Laboratoire) Rabat-Chellah	27 April 1984	Assessment of state of the analytical instrumentation
Ecole Mohammadia d'Ingénieurs (EMI) (Centre International de Génie sanitaire) Rabat	27 April 1984	Assessment of state of the analytical instrumentation
TUNISIA		
Institut national scientifique d'Océanographie et Pêche (INSTOP) Tunis	17-18 December 1984	Service of Varian AAS and joint repair service with Carlo Erba engineer of Carlo Erba GC

Institute	Dates	Instruments
YUGOSLAVIA		
Institute for Marine Research Rudjer Boskovic Rovinj	7 - 11 December 1983	AAS, Varian GC and A-25 Dual Chart Recorder Varian serviced (emergency visit)
	26 September 1984	Service, Varian AAS, BC-6
Marine Research & Training Center Piran	11 December 1983	Discussed the problems re purchase of the new instrument for monitoring
	25-26 September 1984	Emergency service, Varian AAS and GC
Centre for Marine Research Rudjer Boskovic Inst. Zagreb	1 October 1984	Preventive maintenance, discussion delivery of equipment
Faculty of Civil Engineering	28 September 1984	Assessment of analytical instruments
Institute for Oceanography and Fisheries, Split	2 October 1984	Service Aandera RCM-Y
Institute of Public Health Split	3 October 1984	Assessment of state of the analytical instruments
		Preventive maintenance service of Perkin Elmer Chart Recorder
Institute of Public Health Rijeka	27 September 1984	Preventive maintenance and assessment of analytical instruments
Health Protection Institute Pula	27 September 1984	Preventive maintenance and assessment of analysis instruments

Annex X

Equipment provided to MED POL participants
(including items approved but not yet delivered)

Research Centre	Non-expendable equipment
CYPRUS	
Fisheries Department Ministry of Agriculture & Natural Resources 5 - 7 Tagmatarchou Pouliou Nicosia	- Accessories for gas chromatograph - 1 Thermocirculator - 1 Fractional distillation apparatus - 1 Apple computer and printer - 1 mercury analyzer - 1 Combustion flask - 1 Tape reader for recording current meters - 2 recording current meters - 1 Distillation apparatus - 1 U/V Lamp with accessories
FRANCE	
Station Météorologique Hameau de Serres 84200 Carpentras	- 1 High volume sampler
ISRAEL	
Israel Oceanographic and Limnological Research Haifa	- 1 Mercury analyser system with accessories - 1 Centrifugal ball mill - 8 Digestion vessels
Dr. A. Felix Public Health Laboratory Ministry of Health Tel Aviv	- 1 Constant temperature incubator
District Public Health Laboratory Ministry of Health Haifa	- 1 Constant temperature incubator
District Public Health Laboratory Ministry of Health Beer-Sheva	- 1 Constant temperature incubator

Research Centre	Non-expendable equipment
LEBANON	
Centre de Recherche Marine Conseil National de la Recherche Scientifique B.P. 123 Jounieh	- 1 Slip-ring - 1 S/T Sensor
MALTA	
Toxicology Unit (S.L.H.) Department of Health Valletta	- Autosample dispenser for metal analysis by carbon rod AAS - Sediment sampler
Bacteriological Laboratory Public Works Department New Lyceum Msida	- Cooled incubator for BOD - Stirrer hot plate
Department of Pharmacy The University of Malta Msida	-1 Sediment sampler
Public Health Laboratory Department of Health Merchant's Street Valetta	- 1 Stirrer hot plate
MOROCCO	
Institut National d'Hygiene (INH) B.P. 769 Rabat	- 1 Filtration apparatus with accessories
Office National de l'Eau Potable (ONEP) (Laboratoire) B.P. Rabat-Chellah	- 1 Oxymeter - Platinum crucibles
Institut Scientifique des Pêches Maritimes (ISPM) B.P. 21 Casablanca	- 1 Salinometer - 1 Oxygene analyser - 1 ORIN type electrode - 1 Winch with cable - 1 Plastic sediment sampler - 1 Precision thermometer

Research Centre	Non-expendable equipment
Inst. National Agronomique et Vétérinaire Hassan II (INAV) (Laboratoire de Toxicologie) Rabat-Agdal	- 1 Graphite furnace - AAS lamps
Inst. National Agronomique et Vétérinaire Hassan II (INAV) (Laboratoire d'Hygiène et industrie denrées alimentaires d'origine animale) Rabat-Agdal	- 1 Oven
Ecole Mohammadia d'Ingénieurs (EMI) (Centre International de Génie sanitaire) B.P. 765 Rabat	- 1 DBO meter (Ref.2173-01) - 1 DCO meter (Ref. 16500-10) - 1 Temperature regulator - 1 Set for field analysis of water quality
YUGOSLAVIA	
Center for Marine Research "Rudjer Boskovic" Institute P.O. Box 1016 Bijenica 54 Zagreb 41001	- 1 Universal multiprobe and water quality checker - 1 vacuum pressure pump - 1 millipore vacuum assembly
Institute for Oceanography and Fisheries Mose Pijade 63 58000 Split	- 2 analytical cells
The Biological Institute Tvrđava Sv. Ivana P.O. Box 39 Dubrovnik	- 1 Strip-chart recorder
Meteorological Station Bircaninova 6 P.O. Box 604 1101 Belgrade	- 1 High volume sampler
Marine Research and Training Center Piran	- fluorimeter assembly
Centre for Marine Research Rovinj	- Dual mode glass capillary inlet splitter - Mercury analyzer

Annex XI

Expenditures and financial commitments relevant to MED POL,
(In US dollars and in format requested by the Contracting Parties
in UNEP/IG.43/6, Annex VII)

	1983 Expenditures	1984 Committments	1985 Committments
1. PERSONNEL <u>A/</u>			
<u>Experts/Consultants</u>			
- WHO Senior Scientist, P-5, Int.	12mm 70,314	12mm 74,000	12mm 77,760
- FAO Fishery Expert, P-5, Int.	3.5mm 10,377	12mm 63,000	12mm 77,760
- IAEA Maintenance Engineer, P-3, Int.	12mm 49,137	12mm 60,639	12mm 64,800
- FAO Consultants	6mm 28,547	-	-
<u>Administrative Support</u>			
- WHO Secretary, Athens, Int. G-5	12mm 31,317	-	-
- WHO Secretary, Athens, Local G-4	-	12mm 13,000	12mm 13,000
- WHO Secretary, Copenhagen, Local G-4	6mm 6,981	6mm 7,000	6mm 7,000
- FAO Secretary, Athens, Local G-4	3.5mm 2,142	12mm 13,000	12mm 13,000
- IOC/UNESCO Secretary, Paris, Local G-3/G-4	5mm 6,455	-	-
- WMO Secretary, Geneva, Local G-3/G-4	2mm 2,055	-	-
- IAEA Secretary, Monaco, Local G-4	4mm 5,258	-	-
- IAEA Laboratory Assistant, Monaco, Local G-5	10mm 21,031	12mm 28,500	12mm 30,780
Component Total	233,614	259,139	284,100
2. TRAVEL <u>B/</u>			
- FAO	489	7,000	7,000
- WHO	5,767	8,217	7,000
- IOC/UNESCO	1,476	2,000	3,000
- WMO	1,082	2,000	3,000
- IAEA	11,981	15,000	18,000
Component Total	20,795	34,217	38,000

A/ Cost of UNEP staff involved in MED POL covered through Chapter I (Co-ordination) of MAP budget.

B/ Cost of travel of UNEP staff related to MED POL covered through Chapter I (Co-ordination) of MAP budget.

	1983	1984	1985
3. SUBCONTRACTS			
- Intercalibration of bacteriological methods with the University of Barcelona, Spain (through WHO)	4,000	-	-
- Intercalibration of bacteriological methods with Environmental Pollution Control Project Min. of Environment, Athens, Greece (through WHO)	-	4,000	-
- Intercalibration of analytical methods with Institut Pasteur de Tunis, Tunisia (through WHO)	-	4,000	-
- Intercalibration of petroleum hydrocarbon analytical methods with the Bermuda Biological Station (through IOC)	10,000	-	-
- Intercalibration of petroleum hydrocarbon methods with Instituto Química Bio-orgánica Barcelona, Spain (through IOC)	-	10,000	-
- Other intercalibration contracts:			
through WHO	-	-	22,000
through IOC	-	-	12,000
- Printing of ICSEM/UNEP proceedings (ICSEM through the secretariat)	-	14,000	25,000
Sub-total	14,000	32,000	59,000
Research agreements			
- Activity A	29,800	40,000	30,000
- Activity B	-	8,000	18,000
- Activity C	2,000	8,000	18,000
- Activity D	59,500	45,000	30,000
- Activity E	9,000	8,000	18,000
- Activity F	22,000	35,000	18,000
- Activity G	65,500	70,000	18,000
- Activity H	19,500	45,000	20,000
- Activity I	30,000	46,000	15,000
- Activity J	12,500	15,000	10,000
- Activity K	40,150	50,000	20,000
- Activity L	20,660	45,000	30,000
Sub-total	310,610	415,000 ^{1/}	245,000

^{1/} includes US \$ 210,000 rephased 1983 unspent funds

	1983	1984	1985
- Monitoring agreements	-	-	-
Algeria	-	30,000	-
Cyprus	17,000	20,000	-
Yugoslavia	36,000	40,000	-
Israel	38,000	38,000	-
Lebanon	12,000	-	-
Turkey	-	38,000	-
Malta	15,000	-	-
Morocco	-	40,000	-
Greece	-	38,000	-
- New agreements and extension of existing ones	-		285,600
Sub-total	118,000	244,000	285,600 <u>1/</u>
- Jellyfish contracts:	-		75,000
France		9,300	
Greece		27,950	
Italy		9,000	
Malta		6,000	
Spain		3,000	
Yugoslavia		31,950	
Med Terra (Greece)		5,000	
CIMAM (Italy)		7,000	
Sub-total	-	99,200	75,000 <u>2/</u>
Component Total	442,610	790,200	664,600

1/ includes US \$ 45,000 rephased 1984 unspent funds

2/ rephased 1984 unspent funds

	1983	1984	1985
4. MEETINGS/TRAINING/WORKSHOPS/FELLOWSHIPS			
<u>Meetings:</u>			
- Working Group for Scientific and Technical Co-operation	35,000	40,000	45,000
- Workshop on jellyfish blooms in the Med (Athens, 31 October - 4 November 1983)	(35,000) ^{1/}	-	-
- FAO/IAEA/UNEP Consultation meeting on reference methods for the determination of chemical contaminants in marine organisms (Rome, 4 - 8 June 1984)	-	15,000	-
- FAO/UNEP meeting on the toxicity and bioaccumulation of selected substances in marine organisms (Rovinj, 5-9 November 1984)		10,000	-
- FAO/WHO/IOC/IAEA/UNEP meeting on the biogeochemical cycle of mercury in the Mediterranean (Siena, 27-31 August 1984)		10,000	-
- WHO/FAO/UNEP meeting on biological monitoring of methylmercury in Mediterranean populations (Zagreb, 17-21 September 1984)		10,000	-
- WHO/UNEP meeting on correlation between coastal water quality and health effects (Follonica, 14-18 October 1985)			10,000
- FAO/UNEP meeting on effects of pollution on marine ecosystems (Blanes, Spain, October 1985)			10,000
- Consultation meeting on reference methods for the determination of chemical contaminants in sea-water and sediments (late 1985)			10,000
- Jellyfish review workshop (late 1985)			30,000 ^{2/}
<u>Training:</u>			
- On-job training (through the secretariat)	-	77,500	82,900
<u>Fellowships (attendance at meetings):</u>			
- ICSEM/UNEP Workshops	-	35,000	-
- Greek Government seminar on jelly-fish, Athens, Greece	6,500	-	-
- WHO/UNEP intercalibration exercise, Barcelona, Spain	4,000	-	-
- WHO/UNEP other intercalibration exercises	-	8,000	12,000
- Other meetings	30,500	40,000	45,000
Component Total	76,000	245,500	244,900

^{1/} budgeted under chapter 1 of MAP budget^{2/} rephased 1984 unspent funds

	1983	1984	1985
5. EQUIPMENT <u>C/</u>			
<u>Expendable</u>			
- Spare parts for common maintenance service (through IAEA)	19,300	17,000	21,000
<u>Non-expendable</u>			
- Sampling equipment (through WMO)	24,453	17,000	-
- Laboratory equipment (to ILMR)	-	16,000	18,000
Component Total	43,753	50,000	39,000
6. RENTAL AND MAINTENANCE OF PREMISES <u>D/</u>	-	-	-
7. OPERATION AND MAINTENANCE OF EQUIPMENT <u>E/</u>			
- IAEA	1,709	1,500	1,800
Component Total	1,709	1,500	1,800
8. REPORTING COSTS <u>F/</u>			
- IAEA	2,604	1,000	1,300
Component Total	2,604	1,000	1,300
9. SUNDRY <u>G/</u>			
- IAEA	639	661	1,300
Component Total	639	661	1,300
GRAND TOTAL	821,724	1,382,217 <u>H/</u>	1,275,500 <u>I/</u>

C/ Equipment committed through Agreements included in Section 3 (Sub-contracts). For details see Annex X.

D/ No direct costs to MED POL.

E/ This item covers only the cost of operation and maintenance of equipment used by ILMR for common maintenance service

F/ Costs of translation and printing of UNEP documents related to MED POL covered through Chapter I (Co-ordination) of MAP budget.

G/ Cost of sundry items related to MED POL incurred by UNEP covered through Chapter I (Co-ordination) of MAP budget.

H/ Includes US \$460,000 repensed from 1983 as authorized by the extraordinary meeting of the Contracting Parties (UNEP/IG.49/5).

I/ Includes US \$150,000 repensed from 1984 unspent funds.