

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR EUROPE

WELTGESUNDHEITSORGANISATION
REGIONALBÜRO FÜR EUROPA



ORGANISATION MONDIALE DE LA SANTÉ
BUREAU RÉGIONAL DE L'EUROPE

ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ
ЕВРОПЕЙСКОЕ РЕГИОНАЛЬНОЕ БЮРО

Long-term Programme of Pollution Monitoring and Research
in the Mediterranean Sea
(MED POL Phase II)

34090

EUR/ICP/CEH 082

7859r

ORIGINAL: ENGLISH

PROGRAMMES AND MEASURES FOR THE PROTECTION OF THE MEDITERRANEAN
SEA AGAINST POLLUTION FROM LAND-BASED SOURCES

Report on a joint WHO/UNEP Meeting

Alexandria
5-9 November 1989



1990

EUR/HFA target 20

All rights in this document are reserved by the WHO Regional Office for Europe. The document may nevertheless be freely reviewed, abstracted, reproduced or translated, but not for sale or for use in conjunction with commercial purposes. Any views expressed by named authors are solely the responsibility of those authors.

Alle Rechte an diesem Dokument liegen beim WHO-Regionalbüro für Europa. Das Dokument darf jedoch außer zu Verkaufszwecken oder in anderem kommerziellen Zusammenhang ohne vorherige Genehmigung rezensiert, in Auszügen gebracht, vervielfältigt oder übersetzt werden. Die in dem Dokument zum Ausdruck gebrachten Ansichten geben ausschließlich die Meinung der namentlich angeführten Autoren wieder.

Tous les droits relatifs à ce document sont réservés par le Bureau régional de l'OMS pour l'Europe. Il peut cependant être commenté, résumé, reproduit ou traduit sans autorisation, pour autant qu'il ne s'agisse pas d'un usage lié directement ou indirectement à des fins commerciales. Les vues exprimées par des auteurs nommément désignés n'engagent que la responsabilité de ces derniers.

Европейское региональное бюро ВОЗ оставляет за собой все права, связанные с настоящим документом. Тем не менее его можно свободно рецензировать, реферировать, воспроизводить или переводить. Не разрешается лишь продажа документа, либо иное его использование в коммерческих целях. Всю ответственность за любые взгляды, выраженные в подписанных авторами статьях, несут сами авторы.

TARGET 20

Water pollution

By 1990, all people of the Region should have adequate supplies of safe drinking-water, and by the year 1995 pollution of rivers, lakes and seas should no longer pose a threat to human health.

Index:

WATER POLLUTION - prevent/control
SEAWATER
MEDITERRANEAN SEA

CONTENTS

| | <u>Page</u> |
|--|-------------|
| Foreword | 1 |
| 1. Opening of the Meeting | 2 |
| 2. Scope and purpose of the Meeting | 3 |
| 3. Election of officers | 3 |
| 4. Adoption of the agenda | 3 |
| 5. Organization of the Meeting | 3 |
| 6. Review of revised draft guidelines on authorizations for the discharge of liquid wastes into the Mediterranean Sea | 3 |
| 7. Review of revised draft guidelines on submarine outfall structures in the Mediterranean | 4 |
| 8. Review of preliminary draft guidelines on effluents requiring separate treatment | 5 |
| 9. Review of proposed form and content of guidelines on the control and progressive replacement of products, installations and other processes causing significant pollution of the Mediterranean marine environment | 7 |
| 10. Recommendations | 7 |
| Annex 1. Opening message from Dr Hussein A. Gezairy, Regional Director, WHO Regional Office for the Eastern Mediterranean Region | 8 |
| Annex 2. List of participants | 10 |

Foreword

Under the terms of Articles 5 and 6 of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, signed in Athens in May 1980 and in force since June 1983, Contracting Parties undertook to eliminate or minimize pollution by substances respectively listed in Annexes I and II to the protocol, and to subject discharges containing such substances to the issue of authorizations by the competent national authorities.

Under the terms of Article 7 of the same protocol, Contracting Parties undertook to progressively formulate and adopt, in cooperation with the competent international organizations, common guidelines and, as appropriate, standards or criteria dealing in particular, inter alia, with:

- the length, depth and position of pipelines for coastal outfalls, taking into account, in particular, the methods used for the pretreatment of effluents;
- special requirements for effluents necessitating separate treatment;
- the control and progressive replacement of products, installations, and industrial and other processes causing significant pollution of the marine environment.

Preliminary guidelines for authorizations for discharge of liquid wastes into the Mediterranean Sea were prepared by WHO within the framework of the Long-term Programme of Pollution Monitoring and Research in the Mediterranean Sea (MED POL Phase II) and submitted to the first meeting of experts on the technical implementation of the protocol, convened by the United Nations Environment Programme (UNEP) in Athens in December 1985, which recommended comprehensive revision of the draft in question.

Concurrently, as a first step towards the development of ad hoc guidelines for submarine outfalls, a draft version of design computations, based on existing experience in the Mediterranean, was prepared by WHO within the framework of the same programme and submitted to the 1985 UNEP expert meeting.

The meeting approved a calendar of activities for progressive implementation of the protocol covering the period 1986 to 1995. Within the framework of this calendar, a revised draft of the guidelines for authorizations for the discharge of wastes into the Mediterranean Sea, together with draft guidelines on the treatment of effluents containing substances listed in Annex I to the protocol and on submarine outfalls for small to medium-sized Mediterranean communities, were prepared by WHO with the assistance of selected Mediterranean institutions. In addition, preliminary work was commenced in 1989 on the formulation of guidelines for the control and progressive replacement of products, installations and industrial and other processes causing significant pollution of the Mediterranean marine environment.

Within the framework of the MED POL Phase II programme, a meeting on programmes and measures for the protection of the Mediterranean Sea against pollution from land-based sources was jointly convened by WHO and UNEP with the following objectives:

- to review the revised draft guidelines on (a) authorization for the discharge of liquid wastes into the Mediterranean Sea and (b) submarine outfall structures;
- to review the preliminary draft guidelines on effluents necessitating separate treatment;
- to review the proposed form and content of the guidelines on the control and progressive replacement of products causing significant pollution of the Mediterranean marine environment;
- to make appropriate recommendations.

A number of experts from Mediterranean institutions, including those who were responsible for preparation of the relevant drafts or had otherwise contributed to their development, were invited to attend the meeting. In addition, the following international organizations were invited to send representatives: the Food and Agriculture Organization of the United Nations (FAO), the Intergovernmental Oceanographic Commission (IOC), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Atomic Energy Agency (IAEA), the Commission of the European Communities (CEC) and the Regional Organization for the Protection of the Marine Environment (ROPME).

1. Opening of the Meeting

The Meeting took place at the WHO Regional Office for the Eastern Mediterranean (WHO/EMRO), Alexandria, from 5 to 9 November 1989. It was attended by 17 temporary advisers from nine Mediterranean countries, one representative from IOC, two from the WHO Regional Office for the Eastern Mediterranean and one from the WHO Regional Office for Europe. A list of participants is given in Annex 2.

Dr M.H. Wahdan, Acting Director, Disease Prevention and Control, WHO Regional Office for the Eastern Mediterranean, opened the meeting on behalf of the Regional Director, Dr Hussein Abdul-Razzaq Gezairy, as well as on behalf of the Regional Director of the WHO Regional Office for Europe, Dr Jo Asvall. Dr Wahdan transmitted to participants a message from Dr Gezairy, in which he outlined the heavy involvement of WHO in the implementation of the health-related aspects of the Mediterranean Action Plan ever since its initial adoption in 1975, as well as the continuous cooperation between the three WHO Regional Offices, (EURO, EMRO and AFRO) involved. He explained that within the framework of its own regular programme and budget, WHO/EMRO was doing its best to assist in the implementation of the Mediterranean Action Plan through the allocation of funds and technical assistance towards the improvement of marine pollution control.

With regard to the subject-matter of the Meeting, he emphasized that the development and implementation of programmes and measures for the control of land-based pollution was of paramount importance for all Mediterranean States. Industrialization was expanding throughout the whole area, and one significant result of the fast-disappearing heterogeneity between the northern and southern parts of the Mediterranean basin was that southern countries were now becoming faced with the same problems as their northern counterparts on an ever increasing scale, through accelerated as opposed to gradual development. However, there were problems in allocation of resources to deal with marine

pollution, as a number of countries had more basic issues to resolve. The full text of Dr Gezairy's message is given in Annex 1.

2. Scope and purpose of the Meeting

Dr L.J. Saliba, Senior Scientist, Mediterranean Action Plan, WHO Regional Office for Europe, explained the scope and purpose of the Meeting, which had three major documents to review. Participants would have to express their comments both in general and regarding specific details, to facilitate early completion of the final version of each document. All three would then be submitted to Mediterranean governments, mainly for information and guidance. Unlike other documents produced within the framework of the Mediterranean Action Plan, the conclusions and recommendations in any of the guidelines would not be proposed for formal adoption by Mediterranean States and would not, therefore, be legally binding on them. It was important, therefore, that the final version of each document should be based first and foremost on technical considerations.

3. Election of officers

Dr M.K. Bedewi was elected Chairperson, Professor S. Tedeschi Vice-Chairperson and Professor K. Curi Rapporteur. Dr L.J. Saliba acted as Secretary to the Meeting.

4. Adoption of the agenda

The provisional agenda was unanimously adopted.

5. Organization of the Meeting

The Chairperson and Secretary explained the organization of the Meeting, including working hours and other arrangements. It was agreed that the Meeting would work mainly in plenary, although small working groups would be set up, if considered necessary, to discuss modifications proposed to individual documents.

6. Review of revised draft guidelines on authorizations for the discharge of liquid wastes into the Mediterranean Sea

The Meeting comprehensively reviewed the revised draft guidelines on authorizations for discharge of liquid wastes into the Mediterranean Sea (document ICP/CEH 082/6), prepared by Dr M. Vassilopoulos and Mr A. Katsaounis, which had been revised following the recommendations of the WHO/UNEP Consultation on guidelines for effluents requiring separate treatment, held in Athens from 22 to 24 June 1989. Apart from minor modifications to the text, this consultation had also recommended that the final draft of the document should include (a) a clearer definition, in the introduction, of the scope of the publication, together with an appropriate abstract, (b) the substantive material in the current draft, incorporating agreed modifications, (c) additional material dealing with river inputs, and (d) a new and relatively short action-oriented section providing concise guidelines from the practical aspect, as distinct from the more detailed treatment provided in the substantial part of the document.

The revised draft incorporated, so far as possible, the above amendments and modifications. The consultation agreed that the new document was extremely informative and represented the results of a considerable amount of

work. However, it was considered that the document could be further enhanced in value if the final version was organized as follows:

- (a) a synthesis of the technical information contained in the main text of the document;
- (b) elaboration of the new section constituting concise action-oriented guidelines to provide clearer instructions and recommendations on the basis of Annex III to the Protocol; and
- (c) the contents of the substantive part of the document, which would constitute and provide additional technical information as a reference, and as further explanatory material.

The consultation also recommended that, in the part of the document dealing with environmental capacity, it should be clearly explained that while this could be said to constitute a highly recommendable long-term objective, its practical feasibility was doubtful, and therefore other practices which could be followed in the short-term should also be included. In addition, the section on river basin management should be rewritten, and the role of environmental impact assessment (EIA) in the authorization procedure, wherever applicable, should be explained.

The consultation discussed reporting forms and agreed that the forms currently in use had actually been designed for, and approved by, national MED POL coordinators when submitting country information to the Secretariat of the Mediterranean Action Plan. So far as the document under review was concerned, the inclusion of model forms indicating information normally required by national or local authorities for granting authorizations for waste discharge was considered as more important.

7. Review of revised draft guidelines on submarine outfall structures in the Mediterranean

The Meeting comprehensively reviewed the draft guidelines for submarine outfalls for small and medium Mediterranean coastal municipalities (document ICP/CEH 082/8), prepared by Dr M. Mariño. The outline of this document had been discussed during the WHO/UNEP consultation on guidelines for submarine outfalls in the Mediterranean (Madrid, 3-5 July 1989); the present draft had been prepared on the basis of the conclusions and recommendations of that meeting and had also taken into account the results of the pilot project on efficiency of selected outfall structures which had been operational from June 1987 to June 1989 and in which national institutions from Greece, Italy and Spain had participated.

The Madrid consultation had agreed that prevailing conditions in the Mediterranean Sea made the use of submarine outfall structures a very good option for the disposal of urban sewage, due to (a) the relative ease of construction owing to generally good weather prevailing during summer; (b) the oligotrophic condition in most open areas, which allowed relatively high loads of domestic wastes providing sufficient dilution was obtained; (c) the clarity of the water and its exposure to sunlight, which resulted in significant destruction of several bacterial species and in the degradation of some non-persistent organic pollutants; and (d) the general absence of tides in the Mediterranean Sea, allowing a high level of initial dilution and maximum distance between the point of discharge and potentially affected areas. On the other hand, it had also been recognized that, in some cases,

submarine outfalls gave a relatively poor performance as a result of maintenance problems and damage by winter storm and by boats. Also, repair costs were normally high.

It had also been noted by the Madrid consultation that for the design of large submarine outfalls carrying flows from cities with more than 200 000 inhabitants it was normal practice to obtain access to extensive field surveys, modelling and considerable technical expertise. On the other hand, most outfalls serving cities with fewer than 100 000 inhabitants generally had to be designed and sited on the basis of few, if any, previous studies on receiving water conditions and project parameters, no modelling and less access by the designing engineer to special expertise.

The Meeting agreed with the general format and contents of the draft, as well as with the principle that these should be aimed at two types of potential users: administrators responsible for wastewater management in small and medium-sized coastal cities of less than 100 000 inhabitants, and engineers responsible for the design, construction and maintenance of small to medium-sized submarine outfalls. The method of approach adopted was similarly agreed with. The Meeting considered, however, that more detail in construction requirements should be included, in addition to a reasonably comprehensive bibliography.

While endorsing the conclusions of the Madrid consultation that submarine outfalls represented a good disposal option in the Mediterranean, the Meeting stressed that the scope of the guidelines should be kept within the terms of Article 7.1 (a) of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, and should not enter into any comparison between alternative methods of treatment and/or disposal. It was also agreed that the final version of the guidelines should express as clearly as possible the benefits and limitations of submarine outfalls (the latter particularly where specific conditions or situations prevailed) and should also provide an adequate indication of the options and procedures to be applied in cases such as significant seasonal variations in flow, multiple discharges in the same area, and the existence of sensitive areas such as Posidonia beds in the vicinity of the discharge flow, as well the particular level of treatment prior to discharge.

The Meeting agreed that the guidelines would have to contain information regarding criteria and standards, both for effluents and for seawater quality in potentially affected areas. In this context, criteria and standards already formally adopted by Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and its related protocol, particularly the Protocol on the Protection of the Mediterranean Sea against Pollution from Land-based Sources, should be utilized wherever available. On the other hand, the Meeting noted that such criteria and standards formally adopted by Mediterranean States on a joint basis were limited and, moreover, some of those adopted were only on an interim basis. It was therefore agreed that criteria and standards already in use in individual Mediterranean countries should be quoted as a guide.

8. Review of preliminary draft guidelines on effluents requiring separate treatment

The first outline draft of the present document, prepared by Professor T. Balkas and Dr U. Yetis, had been comprehensively discussed during a WHO/UNEP Consultation on guidelines for effluents requiring separate

treatment (Athens, 22-24 June 1989). During that consultation, it had been agreed that the final version of the document should deal with the main groups of substances constituting the first six items listed in Annex I to the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, i.e. organohalogen compounds, organophosphorus compounds, organotin compounds, mercury compounds, cadmium and cadmium compounds and used lubricating oils, and should include as much updated material as possible on pollution sources and on treatment processes and technologies. In this context, it had been noted that a number of gaps in currently available information appeared to exist, particularly in the case of country-specific data on waste sources and amounts, and on treatment technologies. The Athens consultation had, in fact, recommended that WHO and UNEP should, in this regard, assist to the fullest extent possible in the acquisition of relevant information on treatment processes and technologies, and should make every effort to identify further apparent gaps in knowledge and to collect data from other international organizations and from individual countries.

The present document (ICP/CEH 082/7) had been based on the conclusion of the June 1989 Athens consultation. In reviewing it, the Meeting agreed with its general format and table of contents, as well as with the detail in which each group of substances was treated.

From the general point of view, the Meeting agreed that in the final version of the document, all units should be standardized and expressed as internationally agreed units. In describing the various currently existing treatment options, the level of efficiency of each treatment, together with the approximate cost, if feasible, should be included. Information regarding the disposal of ash and fly ash following incineration would also have to be provided. In general, information on the existing situation in the various Mediterranean countries (and in other countries where applicable) should be provided in as updated a form as possible. In this context, it should be clearly stated that the disposal of several substances dealt with in the document in sanitary landfills was prohibited in a number of Mediterranean countries.

As in the case of the guidelines for submarine outfalls, it was also stressed that information concerning water quality standards and criteria should be included to the fullest extent possible. In this regard, the Meeting recognized that this information might not be available at all for certain groups of chemicals.

In reviewing individual sections of the document, the Meeting agreed that in the case of mercury, tabular information on inputs into the Mediterranean should be supplemented by an appropriate map and the differentiation between industrial mercury discharges and the mercury found in municipal effluents should be clarified. In the case of organotin compounds, treatment alternatives would have to be described in more detail. In addition, when referring to the removal of organotin compounds by the activated sludge process, emphasis should be given to methods of sludge disposal. In the case of organohalogen compounds, updated information would have to be included with regard to production, importation and use of organohalogen pesticides in the various Mediterranean countries, as well as with regard to concentrations of such compounds in the Mediterranean marine environment.

In the case of used lubricating oils, it was considered by the Meeting that this section should contain information on methods of collection and handling, on separation of used lubricating oils from specific effluents,

including available methods and, in tabular form, on the pollutant content of the various types of used lubricating oils. Information on the various types of incineration would have to be more elaborate, and details regarding treatment prior to disposal, wherever applicable, would have to be provided.

The Meeting noted that the final version of the present document would eventually be merged with an updated version of the equivalent material covering substances and groups of substances listed in Annex II to the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, contained in the 1982 WHO/UNEP publication Waste discharge into the marine environment.

9. Review of proposed form and content of guidelines on the control and progressive replacement of products, installations and other processes causing significant pollution of the Mediterranean marine environment.

The Meeting discussed the draft outline content of the planned guidelines on the control and progressive replacement of products, installations and other processes causing significant pollution of the Mediterranean marine environment. Preparation of the relevant document would commence in 1990. The Meeting agreed in principle with the outline content proposed in document ICP/CEH 082/9. It was considered, however, that definitions of all major terms employed should be included. Insofar as the main scope of the guidelines would be to pinpoint industrial processes resulting in significant pollution and to recommend or provide information regarding alternatives, the Meeting considered that detailed information on pollution produced by each process should be included.

10. Recommendations

The Meeting made the following recommendations.

- (1) WHO and, as appropriate, other United Nations bodies involved in the Mediterranean Action Plan should assist to the fullest extent possible in the acquisition of relevant information on treatment processes and technologies from every potential source, to ensure the completeness of guidelines produced for the Mediterranean region.
- (2) WHO and UNEP should ensure that any gap in knowledge concerning treatment processes and technologies which has a Mediterranean dimension should be covered, to the extent possible, through the research component of MED POL Phase II.
- (3) WHO should compile and synthesize existing documentation on alternative waste treatment and disposal options, with a view to making it available to Mediterranean States.
- (4) The active involvement of the United Nations Industrial Development Organization, the United Nations Economic Commission for Europe and possibly the World Bank should be sought in the preparation of the guidelines on control and progressive replacement of products, installations and industrial and other processes causing significant pollution of the Mediterranean marine environment.

Annex 1

OPENING MESSAGE FROM DR HUSSEIN A. GEZAIRY, REGIONAL DIRECTOR,
WHO REGIONAL OFFICE FOR THE EASTERN MEDITERRANEAN REGION

Ladies and Gentlemen, dear Colleagues,

Both on my own behalf and on behalf of Dr Jo Asvall, Regional Director of the WHO Regional Office for Europe, I have great pleasure in welcoming all of you here on the occasion of this Meeting on programmes and measures for protection of the Mediterranean sea against pollution from land-based sources, which is being jointly convened by the two WHO Regional Offices and the United Nations Environment Programme within the framework of the Long-term Programme for Pollution Monitoring and Research in the Mediterranean Sea, commonly referred to as MED POL Phase II.

As you are no doubt aware, the World Health Organization, which is performing a considerable amount of work on the health-related aspects of marine pollution prevention and control, has been heavily involved in the implementation of the Mediterranean Action Plan, particularly in the MED POL programme, ever since its formal adoption by the coastal states of the Regions in Barcelona in February 1975, as well as in the preparatory work performed before that date. There is full cooperation between the three WHO Regional Offices involved, with the European Office (EURO) acting as lead office, and ourselves, the Eastern Mediterranean Regional Office (EMRO), and the African Office (AFRO) as collaborating offices.

Within the framework of its own regular programme and budget, EMRO has done its best to assist in the implementation of the Mediterranean Action Plan through the provision of funds and technical assistance to its Mediterranean Member States to improve pollution control activities, and recently through the allocation of some of its research funds for the financing of marine pollution projects as an extra input into the MED POL programme. Furthermore, to avoid or at least minimize overlap and duplication between regular programme budget activities in the marine pollution field and MED POL activities, the procedures for planning and implementation of which are normally handled at country level by different national authorities, this Office has always maintained full liaison with the WHO/EURO Project Office for the Mediterranean Action Plan in Athens whenever national activities having a possible bearing on this programme are concerned.

It is therefore with great pleasure that we are hosting this Meeting in our Regional Office, not only because of the intrinsic importance of the subject matter itself, but also to enhance our participation in the programme as a whole.

To come specifically to the subject matter of this Meeting, I do not have to emphasize that the development and implementation of programmes and measures for control of land-based pollution is of paramount importance to all Mediterranean States. It is a recognized fact that the bulk of the pollution load of the Mediterranean Sea originates on land. The many cities and ever increasing tourist resorts along its coastline discharge immense amounts of municipal sewage which pose a severe threat to human health, either through bathing in polluted seawater or through the consumption of microbiologically contaminated seafood. Although the situation has improved significantly in a

number of Mediterranean countries, mainly in the northern part of the basin, the geographical extent of the problem has expanded owing to the continually increasing urbanization and tourism development in the eastern and southern parts. This expansion affects our own Region's Member States most of all. Industrialization is also expanding, and the difference between north and south in this sphere of development is definitely not as pronounced as it was two decades ago. This produces the inevitable result of industrial discharges into the sea, with the aggravation of the problem of chemical contamination of fish and other seafood, potentially leading to adverse effects on human health of a long-term nature.

One significant result of this fast disappearing heterogeneity between the northern and southern parts of the Mediterranean basin is that the countries in the latter part are becoming faced with the same problems as their northern counterparts on an ever increasing scale through accelerated, as opposed to gradual, development. The situation is rendered more acute by the fact that, in general, southern countries currently do not possess the relatively sophisticated national and local control infrastructures and furthermore have to divide their resources and efforts through having to deal, in many cases as matters of national priority, with other issues which could be considered as constituting basic sanitary requirements. For this reason, in spite of its acknowledged extreme importance, marine pollution prevention and control in general are accorded different levels of importance when it comes to the allocation of national health resources in the various countries. You should bear this fact in mind when reviewing guidelines and criteria designed for applicability to the whole of the Mediterranean region, particularly when considering the implications with respect to national infrastructures for ensuring compliance.

The Protocol for Protection of the Mediterranean Sea against Pollution from Land-based Sources has been described by the governments of the region as one of the most important components of the Mediterranean Action Plan. This Meeting will be reviewing a number of key elements concerned with the Protocol's progressive implementation, including guidelines for the discharge of municipal liquid wastes, the planning and design of submarine outfall structures for small and medium-sized coastal cities and towns, and treatment requirements for industrial effluents containing substances listed in Annex I to the Protocol. I would like to congratulate the authors of the various drafts, and I am sure that the expertise gathered round the table at this Meeting will produce even better versions.

You all have a long week's work in front of you, and I wish you every success. I also hope that, busy though you will certainly be, you will not confine your presence in our Regional Office to this conference room. I am sure that you would all like to take advantage of your visit here to see more of our Office, and of our work, especially of our environmental health activity. We shall be glad to provide you with any information you require and, from the opposite angle, also to take the fullest possible advantage ourselves of your expertise while you are here. I trust, too, that you will have enough free time on your hands to see something of the historic city of Alexandria.

I hope that your Meeting will be fruitful for further improvement of the Mediterranean Sea's protection.

Thank you very much.

Annex 2

LIST OF PARTICIPANTS

TEMPORARY ADVISERS

- Dr Mohamed Mamdouh Abbas
Marine Chemistry Department, National Institute of Oceanography and Fisheries, Kayet Bay, Alexandria, Egypt
- Professor Turgut Balkas
Environmental Engineering Department, Middle East Technical University, Ankara, Turkey
- Dr Mohamed Farouk Bedewi
Director General, Egyptian Environmental Affairs Agency, Cairo, Egypt
(Chairperson)
- Dr Mary Christine Bertrandy
Responsable, Cellule de lutte contre les pollutions marines, Service maritime des Bouches-du-Rhône, Marseille, France
- Professor Kriton Curi
Turkish National Committee on Solid Wastes, Bogazici University, Istanbul, Turkey (Rapporteur)
- Professor Fahmy M. El-Sharkawi
Environmental Health Department, High Institute of Public Health, Alexandria, Egypt
- Dr Laafif Farza
Médecin de la santé publique, Ministère de la santé publique (DHMPE), Tunis, Tunisia
- Mr George Kamizoulis
Sanitary Engineering Division, Ministry of Health, Welfare and Social Security, Athens, Greece
- Professor Stefano Kanitz
Institute of Hygiene and Preventive Medicine, University of Genoa, Genoa, Italy
- Mr Apostolos Katsaounis
Organization for Planning and Environmental Protection of Athens, Athens, Greece
- Mr Khamis Saad Khamis
Alexandria Sewage Authorities, Alexandria, Egypt
- Professor Tullio La Noce
Water Quality Department, Water Research Institute, National Research Council, Rome, Italy

Dr Manuel G. Mariño

Sanitary Engineering Department, Ministerio de Sanidad Y Consumo, Escuela Nacional de Sanidad, Ciudad Universitaria, Madrid, Spain

Dr Muki Sheffer

Wastewater Quality Section, Ministry of the Environment, Jerusalem, Israel

Dr Viktor Simončić

Institute of Physical Planning and Environmental Protection, Committee for Building, Housing, Public Works and Environment Protection of the Socialist Republic of Croatia, Zagreb, Yugoslavia

Dr Jacques Henri Sironneau

Secrétariat d'Etat chargé de l'environnement, Direction de l'eau et de la prévention des pollutions et des risques, Service de l'eau, Sous-direction de la qualité des eaux continentales et marines, Neuilly-sur-Seine Cedex, France

Professor Stanislav Tedeschi

Faculty of Civil Engineering, University of Zagreb, Zagreb, Yugoslavia
(Vice-Chairperson)

REPRESENTATIVES OF OTHER ORGANIZATIONS

Intergovernmental Oceanographic Commission (IOC)

Professor Yousef Halim

Faculty of Oceanography, University of Alexandria, Egypt

WORLD HEALTH ORGANIZATION

Regional Office for the Eastern Mediterranean

Dr M.I. Sheikh

Chief, Environmental Health Programme

Dr S. Atallah

Acting Regional Adviser, Control of Environmental Pollution

Regional Office for Europe

Dr L.J. Saliba

Senior Scientist, WHO/EURO Project Office, Coordinating Unit for the Mediterranean Action Plan, Athens, Greece (Secretary)

Ms M.Y. Rollo

Secretary, WHO/EURO Project Office, Coordinating Unit for the Mediterranean Action Plan, Athens, Greece