





## Introduction

1. In application of the decision taken by the Contracting Parties at their Fourteenth Ordinary Meeting (Portoroz, 8-11 November, 2005) and the established practice of holding this type of monitoring meeting every two years, the Secretariat convened the meeting to review MED POL's monitoring activities and the use of indicators.
2. The meeting was held in Athens (Greece) at the "Caravel" Hotel from 12-14 December, 2007.

## Participation

3. The meeting was attended by representatives of the following countries: Albania, Bosnia and Herzegovina, Cyprus, Croatia, Egypt, European Commission, France, Greece, Israel, Italy, Lebanon, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Tunisia and Turkey.
4. Representatives from the following United Nations specialised agencies and other intergovernmental organisations were also present: the Commission for the protection of the Black Sea against pollution, the International Commission for the Scientific Exploration of the Mediterranean Sea (CIESM), the International Atomic Energy Agency (IAEA), and the World Health Organisation (WHO).
5. Twelve invited experts also attended.
6. The MAP Secretariat was represented by the MAP Coordinator, the MED POL Coordinator and other senior officers, as well as the Director of PAP/RAC. The MED POL Secretariat acted as secretariat for the meeting.
7. A full list of participants can be found in **Annex 1** to this document.

## Agenda item 1: Opening of the Meeting

8. Mr. Francesco Saverio Civili, MED POL Coordinator, opened the meeting and welcomed participants. This meeting, which for budgetary reasons could only be held once every two years, was an important event in the life of MED POL, focusing as it did on monitoring activities over the two year period now drawing to a close. Historically speaking, monitoring had always been at the very heart of the programme, enabling the progress made in combating pollution to be assessed, and compliance to be checked. The meeting should be seen within the context of the past two years: i) the setting up of the New GEF Partnership for the Mediterranean which, upon its forthcoming final approval, was set to boost implementation of the SAP and national action plans (NAPs), assist numerous anti-pollution activities, with MED POL also having the possibility of recruiting a full-time official for five years, charged with providing a link between the countries, their needs and the opportunities for donor funding; ii) the gradual future implementation of the ecosystem approach, which would be another way of tackling, designing and inter-linking the activities not only of MED POL, but of MAP in its entirety; iii) the setting up of a Compliance Committee stemming from the Barcelona Convention and its Protocols; iv) the adoption of the differentiation approach principle in the pollution reduction process, the implementation of which still needed to be clarified and fine-tuned; iv) and finally, the approval last September by the MAP Focal Points meeting of MED POL-Phase IV (2006-2013) and MED

POL's programme and budget for 2008-2009. All these developments, set to be rubber-stamped by the Fifteenth Meeting of the Parties in Almeria in January, would provide the framework for activities over the forthcoming two year period and well beyond. But this meeting stood out from similar ones in the past, which had tended to focus on the scientific aspects of monitoring: ensuring that monitoring data could be better used for management purposes, such as evaluating the effectiveness of measures taken, with particular use being made of indicators. In a nutshell, this meeting was called upon to give thought to the future of monitoring and to set some pointers.

9. The MED POL Coordinator pointed out that since Mrs.Çolpan Beken, the former officer in charge of monitoring, had left last October, until such time as a successor was officially appointed he had brought in Mr. Gabriel Gabrielides as an interim replacement. For many years Mr. Gabrielides had served on the staff of the Coordinating Unit, and thus had vast experience of MAP and MED POL issues. He thanked Mr. Gabrielides for contributing so effectively to the technical preparation for the meeting.

### **Agenda item 2: Election of the Bureau**

10. Following the usual unofficial consultations by the Secretariat prior to the opening ceremony, the meeting elected its Bureau as follows:

Chairperson: Mrs. Marina Argyrou (Cyprus)  
Deputy Chairperson: Mr. Lassad Chouba (Tunisia)  
Deputy Chairperson: Mr. Rani Amir (Israël)  
Rapporteur : Mrs. Etleva Canaj (Albania)

### **Agenda item 3: Adoption of the agenda and organisation of work**

11. The Chairperson proposed the draft agenda (doc. UNEP(DEPI)MED WG.321/1), the draft annotated agenda (doc. UNEP(DEPI) WG.321/2) and the timetable, which were adopted by the meeting. It was pointed out that a summary of conclusions and recommendations would be drawn up based on discussions in the course of the meeting, and submitted to the meeting for approval on the final day. The full report of the meeting would be drawn up at a later stage and sent out to participants for review and comment prior to its adoption. The MED POL Coordinator added that various presentations would be made, not all of which were indicated on the agenda, but that this would not affect the organisation of work. The meeting agenda can be found in **Annex II** to this document.

12. Those delegates who subsequently took the floor each congratulated the representative of Cyprus on her election, and thanked the Secretariat for the excellent documentation. One of them did point out, however, that some of the information documents were only available in English, and requested that they also be translated into the other working language.

### **Agenda item 4: Scope and objective of the meeting**

13. The MED POL Coordinator briefly presented the backdrop to the meeting, its scope and its aim. He stressed that besides the usual review of the technical aspects of the various types of monitoring, the problems encountered and means of solving them, the Secretariat was also

proposing that this meeting should endeavour to investigate how, through making new or better use of indicators, and with an eye to future application of the ecosystem approach, the various activities could become tools for the implementation of the SAP and NAPs. Recalling how MED POL had gradually evolved through various Phases, from simple evaluation through to pollution control, Mr. Civili noted that although major progress had been made in monitoring over the years, still only a number of countries had full programmes, other countries' programmes were still incomplete, some did not even have one, whilst others did indeed have major programmes yet failed to regularly send in their data. The situation was far from satisfactory. Monitoring was mandatory under article 12 of the Convention and article 8 of the LBS Protocol. Although MED POL earmarked a large portion of its budget for monitoring, the results were still rather limited. Moreover, the entire SAP and NAP system built up over the last few years hinged on good monitoring, which allowed the effectiveness of anti-pollution measures to be checked and provided an additional legal requirement for quantified objectives with deadlines. At the Palermo meeting the States had undertaken to make consistent efforts. Whilst it was fair to say that there had been no fundamental change in the situation over the past two years, nor should we dramatise. The situation had been complicated by the fact that there was no longer a clear-cut distinction between the Northern/EU countries with advanced programmes and those to the South and East which were lagging behind. Rather, we were now faced with quite divergent situations within each zone. In a nutshell, there was a need for improvement. Moreover, the setting up of the Compliance Committee, doubtless set to be rubber stamped in Almeria, was an additional reason for all States to comply with the monitoring obligations. The meeting was invited to think along these lines and to come forward with proposals.

#### **Agenda item 5: Aspects of monitoring activity**

##### **Design of monitoring programmes**

14. Mr. Gabriel Gabrielides, MED POL Consultant, introduced working document UNEP(DEP)/WG. 321/3, starting with the design of monitoring programmes focused on objectives which, apart from the introduction of the ecosystem approach for the management of human activities due to apply to MAP as a whole, MED POL included, had remained practically unchanged under Phase IV as compared with Phase III. In discussing the problems related to the monitoring programmes it was not a question of pointing the finger at a given country, but rather of helping the States to overcome their difficulties, which indeed was the whole point of MED POL, and making the best possible use of budgetary funds. This was why MED POL had also signed up to other projects which could boost assistance, as was the case with Mytilos-Mytimed.

##### ***Presentation: the Mytilos/Mytimed/Mytiad programme***

15. Mr. François Galgani, research officer at IFREMER's Mediterranean Centre//Toulon (France), mapped out the historical background and terms of Mytilos, a bio-monitoring cruise programme which began in 2004 and consisted of dropping and subsequently collecting cages of indicator species (mussels), which were able to concentrate contaminants and were bio-integrators, providing an overall picture of environmental pollution. The pollutants in question were those stipulated by the EU's Water Framework Directive. The programme had kicked off in the North-Western Mediterranean with a network of partner laboratories to analyse the 950 samples taken between 2004 and 2006 and examined according to reference methods. For 2007-2008 it had been extended to the Central and Eastern Mediterranean (Mytimed) with MED

POL backing, and negotiations were underway to bring other countries on board, particularly the Adriatic ones (Mytiad).

16. In the ensuing debate, all speakers felt that the Mytilos programme should be encouraged due to its regional coverage, the comparability of its methods, its results and the number and importance of the pollutants studied. Others wanted to know how the data concerning their respective countries would be communicated and wondered about the future direction of the programme. Was it not possible to deal directly with national MED POL Coordinators on the matter of country participation? Finally, it was pointed out that the *Mytilus galloprovincialis* mussel which was widely used by Mytilos was unsuitable for the Eastern Mediterranean.

17. Mr. Galgani pointed out that in the spirit of those who had designed it, the Mytilos programme was to be seen as the chemical component of Mediterranean coastal monitoring as a whole under the EU's Framework Directive. As for the partner states, they would obviously be informed about the data analysed, which would also be published on the project's website. As for the future Mytilos/Mytimed/Mytiad, it was actually one and the same programme but as referred to Western, Central and Eastern areas of the Mediterranean respectively. The MED POL National Coordinators were to be the first to be contacted for each country, as had already happened with several of them since MED POL's involvement. Finally, there was indeed an issue with *Mytilus galloprovincialis* when it came to the Eastern Mediterranean: in Rhodes, for example, 50% mortality had been observed for the mussels studied. A different species of mussels commonly found in these waters such as *Brachydontes minimus* would therefore be used.

#### State and trend monitoring

18. Following on from the presentation, discussion turned to MED POL state and trend monitoring, as briefly recapped by the Secretariat. Following the comment by the EC representative that the Compliance Committee would be too heavy a weapon to use in an area which was intended to remain as a full cycle of scientific cooperation, goodwill, mutual assistance and information sharing rather than being taken to the political level, the MED POL Coordinator pointed out that he had not instanced the Committee as a threat: the Secretariat was not entitled to open proceedings against any given country, but countries were, and this needed to be borne in mind. Once again, the vocation of the Secretariat was simply to assist the states in meeting their obligations. One representative proposed that a panel of the most competent monitoring experts be set up under MED POL's aegis to assist countries with difficulties. Another delegate wanted the Secretariat to publish guidelines in order to improve the monitoring components.

19. The Secretariat pointed out that he did not see this type of panel being institutionalised, but that depending on the circumstances he did have the names of certain experts who could be called upon from time to time to help countries solve their problems. As for the obligations, the point was that several countries still had no monitoring programme and that in the absence of political will at the outset nothing could be done, starting with funding by the States of the institutes involved. MED POL had funds to finance assistance for programmes in difficulty, but not to finance the regional monitoring programme as such. Finally, on notification, it was recalled that agreement had been reached between MED POL and the EEA on data initially being sent by the States to MED POL, which would subsequently forward it to the EEA. Moreover, MED POL was striving to harmonise the reporting formats as far as possible with the EU's, such as

Reportnet, and the introduction of MED POL's Infosystem would further facilitate countries' work in the future.

***Presentation : Problems encountered during evaluation of monitoring data on temporal trends***

20. Mr. Robert Precali from the Rudjer Boskovic Institute (Croatia) presented the definition, objectives, necessary conditions and criteria for temporal trend monitoring and the various methods used, including OSPAR's Trend-Y-tector. The problems could be due to three reasons: inconsistent sampling in terms of frequency, the monitoring operation itself, the size categories and species being sampled; poor data management (such as errors when uploading into the database, incorrect units of measurement, etc.) and poor data quality assurance. These problems could be overcome by defining an appropriate sampling strategy, using the international units system, providing good data quality control and taking great care when completing the forms.

21. The presentation provided the opportunity to tackle certain specific technical aspects such as the need to express the values measured in dry or fresh weight, to record detection limits, etc. It was accepted that it was not possible to establish a trend in less than five years of monitoring, and that sometimes they only emerged after ten years or so. The general opinion was that this type of monitoring should be continued, but in a more consistent and stringent manner. Several speakers felt that a regional handbook needed to be drawn up. It should be based on appendix II of No 120 in the MAP Series of Technical Reports on site specific temporal trend monitoring (MTS 120 : MED POL-Phase III) from 1997, but in a new shape and form with more details, diagrams and illustrative tables for the statistical part. Moreover, it was time to organise another training course in this field. MED POL's mission was to ensure that methodologies were as harmonised as possible since three sets of data were involved: national, MED POL and the Water Framework Directive. States could adapt the planned handbook according to their own national conditions and particulars.

Compliance Monitoring

a) Quantification of inputs

22. The MED POL Coordinator recalled that all the states had successfully drawn up their National Baseline Budgets (NBBs) for 2003 based on the emission factors contained in software sent to all the scientists concerned. A base of complete and comparable data had thus been established. This exercise was to be repeated every five years in order to collect more up-to-date information, with the next one therefore due in 2008. Similarly, as far as diffuse sources were concerned, a research project was to be launched in order to fill the knowledge gaps on atmospheric input, combining a summary of existing data and modelling. A monitoring network with at least one station per country was also to be set up to evaluate atmospheric deposits.

23. One delegate was concerned about the methodology likely to be used in the forthcoming NBB exercise. The Coordinator specified that the 2008 NBB would still be conducted using the emission factors in the updated software. The switch to measuring direct discharge would only take place at a later stage and very gradually, given the relatively high cost this would entail.

24. The EC representative pointed out that the EMEP- the programme under the Convention on Long-range Transboundary Air Pollution- had an inventory and provided a service related to this issue, with a model for the Northern hemisphere including the Mediterranean. It might

therefore be useful for MED POL to use this service, thus avoiding duplication. The Coordinator replied that through the WMO in the Mediterranean MED POL had already worked with EMEP stations ten years previously, and that their cooperation had come to an end for purely administrative reasons. It was an excellent idea to take it up again, and this could be one of the recommendations from the meeting. For her part, the representative of the Commission on the Protection of the Black Sea mentioned the relevant programme also being conducted by the European Space Agency (ESA).

#### b) Health Aspects

25. Mr. George Kamizoulis gave an outline presentation on monitoring the health aspects of coastal waters, mainly relating to bathing and shellfish waters. Since 1985 and the adoption of the provisional common Mediterranean criteria based on faecal coliforms, only a handful of countries had submitted data on the sanitary compliance of their bathing and shellfish waters. Between 1995 and 2005, the number of countries having submitted data rose from thirteen to twenty, with a degree of compliance in excess of 90%. Although generally speaking there had been a clear improvement in Mediterranean bathing waters since 1983, major efforts were still required to ensure the safety of holiday-makers, and there was a geographical imbalance of cover for the 12 000 sampling points recorded in 2005, to the detriment of the Southern and Eastern shores. Over recent years, following epidemiological studies, the 2003 WHO guidelines and the EC's 2006 directive on bathing waters based on faecal streptococci, several non-EU Mediterranean states had decided to adopt the EC directive and were thus monitoring the same indicator. A meeting of experts in June 2007 agreed that in the future the new standards and criteria on bathing water in Mediterranean states should be in accordance with the new EC directive, based on intestinal enterococci and classification in 4 microbiological quality categories.

26. Some delegates noted that data on shellfish waters was particularly lacking, and it was pointed out by Mr. Kamizoulis that five countries had failed to report, whilst at least another three had no legislation on shellfish areas, or did not even have areas officially designated as such. The standards and criteria to apply should be harmonized with those stipulated by the EU. Two participants raised the issue of the definition of the beaches being monitored: those currently being monitored were official, organised sites as such, but there were plenty of other « unorganised » and very busy beaches to which the monitoring system should apply for obvious health reasons. Mr. Kamizoulis pointed out that the distinction was up to the individual states and that as far as the EU Mediterranean countries were concerned, most of the monitored beaches were not « organised » in the usual sense of the term, with cabins, toilets, first-aid posts, etc. Finally, the participants raised the issue of algal blooms and, thanks to recent techniques, the possible use of remote sensing to detect eutrophied and potentially toxic areas with a high concentration of chlorophyll 'a'. Emphasis was placed on the need to monitor phytoplankton and phytotoxins likely to produce pathological effects, particularly in people eating shellfish (growing importance of the shellfish sector for export).

#### Sampling strategy

27. Mr. Gabrielides explained that MED POL had long been committed to drawing up common sampling strategies for different types of monitoring – trends, eutrophication, sediment – to ensure reliable and comparable data. It would appear though, from the responses to a questionnaire provided by the states, that most of them stuck to their own strategies. The Secretariat was anxious to open a debate to allow participants to air their views on this subject



and so that a decision could possibly be taken on whether or not there was a need for a common strategy.

28. Two delegates defended a « minimal » strategy to ensure compatibility and agreement between the various countries, as shown by Mr. Precali's presentation. For the rest, each country should apply its national programme, at least for state and trend monitoring for pollutants, eutrophication being a more specific case. According to another representative, some countries were bound by other conventions to respect a given sampling procedure and strategy- OSPAR, for example. Other representatives felt that it was not possible to dictate the parameters, frequency and sampling methodology for countries faced with divergent demands or constraints. The conclusion was that a middle way should be sought, in other words a joint regional strategy but of a general nature, with the details being left up to the countries depending on their local conditions, their needs and their means. In drawing up this strategy, MED POL should seek harmonisation between the conventions and organisations to which the Mediterranean countries with other coastlines belonged- the North-Eastern Atlantic (OSPAR), the Black Sea, the Red Sea.

### **Data quality assurance**

29. Mr. Gabrielides informed the meeting that this item had been split into three activities: a) chemical contaminants, which since the very start of MED POL had been dealt with by the Monaco Laboratory (IAEA-MEL); b) bio-markers, dealt with by the DISAV Department of Italy's Alessandria University; and c) eutrophication parameters, recently dealt with in cooperation with QUASIMEME. The aim of the discussion to follow the presentation was to see how the DQA programme could be changed to render it more effective.

#### **a) Chemical contaminants**

#### ***Presentation: Building credibility: quality assurance and control for monitoring***

30. Mr. Jae R. Oh, Head of the Marine Environment Laboratory (IAEA-MEL, Monaco), reviewed the concepts of QA and QC and the means for applying them to monitoring, stressing that the main factor in determining the level of quality was the cost of error. The important issues to be borne in mind were the following: what was the data to be used for? Who would it be used by? What should be the quality, i.e.: precision, exactitude, comparability, exhaustiveness, representativity, sensitivity – all of which he dealt with in turn. QA/QC were first and foremost achieved through repetition since measuring one single sample could say nothing about the environment, only about the sample itself.

31. As a prelude to the discussion, Mr. Gabrielides stressed that, generally speaking, there had been insufficient participation by the laboratories in the region, and that those which did take part had not sent in their results regularly. Finally, the analysis of organic contaminants continued to pose a serious problem. The results built up over more than thirty years therefore needed to be very carefully scrutinised to decide how to carry forward or change activities, and what should be the fate of the reference methods.

32. According to the expert from IAEA-MEL, the Monaco training sessions were going well, but once back in their own countries the trainees were faced with different conditions- for example, the instruments did not work correctly- and part of the training received could therefore not be put to good use. On-the-spot or sub-regional training could offset these drawbacks and cost less. Several speakers supported this, whilst at the same time stressing the need for

training at the sampling stage. One representative felt there were two alternatives: either to approach the policy-makers to convince them that data gathered from poor procedures was useless, or to directly approach the laboratories and scientists to make them aware of their responsibilities. It was, however, accepted that general training and inter-calibration should remain in Monaco, because reliable results had been achieved over the last 5-6 years, new techniques such as ICP-MS were to be introduced, as were some new problematic contaminants such as TBT, phenols and hydrocarbons. As for the reference methods, they needed to be revised or updated, cover the new pollutants proposed, and be posted on the website.

33. The Coordinator welcomed all these ideas as positive. For the new pollutants proposed, it was nonetheless important to recall that the monitoring programme was to be revised, particularly the mandatory and optional parameters, and that in designing monitoring as a management tool this would be done in the light of SAP implementation and the priority common problems noted in the NAPs.

b) Bio-markers

c) Eutrophication parameters

34. Mr. Gabrielides reminded the meeting of the activities conducted on behalf of MED POL by Alessandria University's DISAV, which was responsible for the bio-monitoring programme under Professor Viarengo's leadership, both on training and in technical capacity building for some laboratories in less developed countries. It had also published a handbook and produced a video (in cooperation with RAMOGE) on the use of the various bio-markers and the organisation of inter-calibration exercises to ensure that results were comparable.

35. Moving on to the matter of eutrophication parameters, the speaker briefly mentioned the training sessions organised for this form of monitoring in Italy and at the IAEA-MEL, but added that the crucial decision had been to call on the services of QUASIMEME, with which agreement had been reached on the participation of 15 Mediterranean laboratories in the 2007-2008 inter-calibration cycle, with testing material being distributed. Participants were asked to give their views on these two aspects of monitoring.

36. One representative requested that DISAV should provide participants in its inter-calibration exercises with some form of official recognition or certification. Many participants were pleased that their respective countries took part in QUASIMEME and encouraged the Secretariat to continue and expand this collaboration. Some merely pointed out that it was a little difficult to respect to the letter the instructions for the notification procedures or the standard methodology required by QUASIMEME. Finally, the representative of Morocco listed the activities being conducted by his country with MED POL backing to monitor eutrophication in Nador lagoon.

**Data collection and reporting**

37. Mr. Gabrielides ran through the various problems encountered in data reporting, a point already partly touched upon at the start of the meeting by Mr. Precali regarding temporal trend monitoring. These problems were related to errors noticed as the data was uploaded into the MED POL database related to the names and details of the stations, recording the DL (detection limit), the units of measurement used, etc. The Secretariat was open to any suggestions which could help simplify the forms. The way in which data was sent to the Secretariat was set to change completely in the near future with the introduction of the MED POL Infosystem, a

description of which was going to be provided by the INFO/RAC expert who was designing it. The report submission module in this system already made it possible for the files to be uploaded and submitted, compliance with the MED POL reporting format checked and the log file confirming the success or failure of the submission to be sent back to the users. It was currently being tested on site and with the states.

### ***Presentation : MED POL Infosystem***

38. Mr. Marco Montuori, a MED POL-INFO/RAC expert, presented an overall vision of the future applications of the MED POL Infosystem, which was intended to support the programme's work and activities, to manage its database and to provide its main communication and data exchange system. He described the various modules: authentication and authorisation to access the database, report submission, specifications, the form for the report files, data submission. A data plotting module was also planned for, so that bar or pie graphs of pollutants could be drawn according to time, sampling stations, etc., as well as a GIS module offering GIS functionality for exploring MED POL data. On the webpage, the user would have a report of any errors he had made in transmission, which he could then correct off-line and upload again. Repetition of previously committed errors should thereby be avoided. Each country would have its database in this system.

39. The lengthy ensuing debate focused on issues of security and data confidentiality, secret codes, passwords, access authorisation provisions, who would be officially entitled to grant authorisation to enter data, etc. Questions were also raised on intellectual property rights for the data, conditions for its publication, metadata and its use according to international standards, what would happen to data not strictly belonging to MED POL (as with Mytilos), and what would be the fate of historic data already in the MED POL base. Several speakers stressed the need for interoperability between the MED POL Infosystem and the national systems, as well as data transparency, which in any case was already generally demanded by the public and NGOs. It would also be important to integrate the PRTRs into the Infosystem. Others proposed that IT expert missions should visit the countries to assist the smooth running of the system, and stressed the added value to be gained from publishing the data in international literature. The EC representative flagged up the Water Information System for Europe, launched in March 2007 under the acronym WISE, the aim of which was to enable users to access scattered information about water through a single inter-active viewer. WISE initially focused primarily on freshwater, but the EC intended to send a document to all the international organisations so that they could use the data on seawater.

40. The Secretariat felt that the many points raised bore witness both to the enormous interest generated by the issue and to the legitimate concerns it raised. It was important to recall that at the extraordinary meeting in Mytilene in March 2007, the self-same concerns had triggered the request for a document to be drafted on data management policy, which was submitted to the MED POL Coordinators meeting in Hammamet in June 2007. Generally speaking, participants had welcomed the document, finding its principles on user profiles, the authorisation procedure and conditions of access to « restricted » data precise and specific. The Secretariat had taken note of the new proposals just made, such as how it would be useful to organise training sessions on how to use the Infosystem and building up contacts with the computer scientists who would be using it at national level. As things stood, the Infosystem project was still in the pipeline, and under the planned reshuffle of INFO/RAC Italy had confirmed that this activity would be finalised as per schedule. For 2008-2009 this would therefore involve trials and user acceptability tests being conducted and preparatory assistance

and training before the on-line system became operational and required the setting up of the data plotting and GIS mapping modules. Under the terms of the approval granted in Hammamet, it had in any case been foreseen that the states would be left ample scope to make any further comments and, as per usual, in its cooperation with INFO/RAC on this project the Secretariat would do nothing without first consulting the states and being given the go-ahead.

### **Data interpretation and use**

41. The MED POL Coordinator stated that monitoring data underwent statistical or other processing to convert it into metadata and information which could be used for management or decision-taking purposes, such as closing down beaches, banning shellfish consumption, taking sanctions against offending industrial plants, or issuing advanced warning in order to duly avert possible pollution. MED POL therefore invited the meeting to give some thought to how data could be put to such use in the respective countries, and expressed its readiness to assist them in this field.

42. Two participants expressed the view that the list of data uses for management ends they had just been given only concerned the national level and that, from the MED POL point of view, the regional or sub-regional level needed to be taken into account. In other words, what should be gathered was data which could be used for a collective evaluation allowing each country to pinpoint itself in terms of the general situation. A further representative felt that some of the uses mentioned -beach closure, consumption bans- were of no relevance to MED POL since these were measures in real time, to be taken as a matter of urgency. Another delegate pointed out that some of the data was indeed of interest to the national level, but that it could at the same time be of use to the PRTRs, the NBBs and for certain decisions to be taken at regional level, such as setting limit values. It was therefore not possible to completely dissociate the national and regional levels.

43. The Coordinator recalled the existence of the Convention and Protocol and their obligations. But what if there were no MED POL? There would still be monitoring programmes in most countries thanks to these obligations, the results of which would lead to measures being taken at national level to improve the state of the marine environment. That was a fact. On the other hand, MED POL did exist, and it could for example use the same data and results to publish with the EEA two major documents on the state of the marine environment in the Mediterranean and to establish priorities and programmes giving rise to further obligations, as with the SAP, and to influence as far as possible decisions to be taken at national level.

44. Mrs. Hema, MEDU Programme Administrator, recalled that a new element introduced into the MAP reporting system also required the states to report on the effectiveness of measures taken at national level to combat pollution. This was putting national data to fresh use to contribute to the regional evaluations.

## **Agenda item 6: Specific issues**

### **Bio-monitoring**

45. Mr. Gabrielides gave Professor Viarengo's apologies for not attending the meeting, since he was presently organising a bio-monitoring training session in his university. Mr. Gabrielides summed up document UNEP(DEPI)MED WG.321/Inf.3 on the MED POL workshop on the monitoring of biological effects which was organised by DISAV in December 2006 in order to

review the work conducted under Phase III on the proposal to have a two tier approach for classifying the pollutant-induced stress syndrome (using a single bio-marker or a complete range of them, respectively, on caged molluscs). The workshop had recommended in particular that MED POL harmonise its evaluation criteria with those of the Northern European organisations and conventions, integrate the two tier approach into Phase IV, encourage bio-monitoring in all states and provide environmental managers with simple bio-marker integration indexes. Mr. Gabrielides pointed out that in March 2007 MED POL had subsequently taken part in the ICES working party convened to explore the means of cooperation between OSPAR, HELCOM and MED POL towards the afore-mentioned harmonisation. Participants were invited to share their views.

46. Although the conclusions and recommendations generally received a positive welcome, certain participants felt that it would be preferable to stick with specific bio-markers for specific areas, rather than generalising their use to all coastal areas. Similarly, the choice of species was also important: they should be plentiful in the region under study, easily sampled and linked to elements of the habitat. *Mullus barbatus* was not to be advised as it lived in relatively unpolluted deep waters and its survival was risky. Bio-monitoring methods were as a whole evolving rapidly, and the states needed to be granted some degree of leeway in choosing their bio-markers and species.

### **Sediment strategy**

47. Mr. Gabrielides recalled that the conclusion of the second review meeting on MED POL monitoring activities (Saronida, Greece, 2003) had been that a new trend detecting sediment sampling strategy needed to be developed, which led to the convening of an experts meeting in April 2005 and the subsequent drafting of a sediment sampling and analysis handbook which was presented to the Palermo monitoring activities review meeting (December 2005). The handbook had been revised following the discussions in Palermo, and Mr. Barak Herut had improved the section on standardisation, which he was about to present. It was the Secretariat's hope that the handbook was now in its final form (UNEP(DEP)/MED WG. 321/Inf,4).

### ***Presentation : factors and methods of standardisation***

48. Mr. Barak Herut of the Israel Oceanographic and Limnological Research Laboratory explained that in order to detect anomalous concentrations of metals of anthropogenic origin, the results needed to be standardised using a physical or chemical factor. Determining aluminium (Al) and total organic carbon (TOC) should be mandatory. Where possible, it was also recommended that Fe and Li should be determined as additional standardisers in order to improve the evaluation of spatial and temporal trends throughout the basin. The lack of any sets of standardised data for the Mediterranean meant that it was not possible to define the « pivot values » and to use the OSPAR method of chemical standardisation. It was recommended for the areas under monitoring that a standardised analysis be conducted, including in particular i) granulometric distribution ii) concentration of heavy metals in the natural unpolluted sandy fraction; iii) mapping of the range of chemical standardisers; iv) evaluation of errors linked to the method of standardisation.

### **Eutrophication monitoring and evaluation strategy**

49. Mr. Gabrielides pointed out that the eutrophication monitoring and evaluation strategy initiated in Venice in 2001, had been discussed on numerous occasions at the various subsequent MED POL meetings (Rome, 2001; Athens, 2002; Sangemini, 2003), and that finally,

in Palermo in December 2005, a draft « MED POL Strategy on eutrophication : updated report and proposal for new indicators », drafted and presented by Mr. Giulio Izzo (ENEA), had prompted the participants to set up a group of experts mandated to review what modifications needed to be introduced and at a later stage supplemented by the recommendations which emerged from a workshop held in Athens in February 2007. So once again the meeting was being asked to consider a document revised by Mr. Izzo to take account of the various viewpoints expressed in the course of these meetings, with reference UNEP(DEPI)/MED WG.321/Inf.5.

***Presentation : MED POL eutrophication monitoring strategy: conceptual framework and proposal to update monitoring***

50. Mr. Giulio Izzo, Environmental Biology and Nature Preservation (ENEA, Italy), introduced the main differences between the original document presented in Palermo in 2005 and the new revised version which included a substantial bibliography, more references to zoobenthos and a freshly formatted final table, with new indicators having been added. Eutrophication was now defined as excess input of organic matter. Emphasis was placed on the fact that it represented a threat to the global climate, given the negative impact of eutrophied sites on the greenhouse effect. A proposal for new parameters was laid out: daily oxygen variation (OD), organic matter in sediment (total organic carbon TOC, polychlorobiphenyls (PCB)), acid volatile sulphides (AVS) and Fe in sediment, and the distribution of the dominant phytobenthos species.

51. The presentation prompted several comments. Measuring dissolved oxygen required a specific protocol in terms of the height of the water column. Participants stressed the convenience and interest of measuring the TRIX index, whilst daily variations in dissolved oxygen were fine for lagoons but proved more problematic in the marine environment; others felt that the index could be improved by adding new parameters. For the Levantine Basin the proposal in the document would need to be modified according to the ecosystem areas, with workshops being suggested to this end. Finally, one participant pointed out that remote sensing allowed the detection of areas where quantitative eutrophication studies could be conducted.

52. The revised document was finally accepted with slight modifications. The Secretariat confirmed that discussion of the TRIX index would continue with the presentation of the next document drawn up by the HCMR with reference UNEP (CEDI)/MED WG. 321/Inf. 6, on eutrophication evaluation in the Mediterranean, based on the information submitted by the states in response to a questionnaire, and comments made by an experts group which met at the HCMR in February 2007.

***Presentation: Approaches to the evaluation of eutrophication in Mediterranean coastal waters (pre-draft)***

53. Mrs. Kaliopi Pagou from the Hellenic Centre for Marine Research (HCMR) presented the general outline of the afore-mentioned document with the following sections: overview of the aspects of eutrophication in the Mediterranean according to the DPSIR approach; overview of the forms of eutrophication in the Mediterranean; overview of eutrophication-related activities in international policy; overview of eutrophication monitoring strategies and the evaluation methods used in the Mediterranean; evaluation of the trophic situation in the Mediterranean using the TRIX index; Conclusions et recommendations.

54. The document was welcomed overall, although some improvements were proposed: better integrating the rich but often scattered information transmitted by the states, displaying it

where possible in tables and diagrams; enlarging the remote sensing images for the Mediterranean which, whilst highly useful, did not give the picture in their current format; providing estimates on the table to indicate eutrophic sites or those undergoing eutrophication. A distinction should also be made between toxic algal blooms and eutrophication phenomena.

55. Four participants regretted either not having received the questionnaire or it not having reached their national coordinator. One of them requested that it be sent to them again, that information always be returned through the national coordinator, and that the document be translated into the other working language; other participants flagged errors or omissions in the text for their respective countries.

56. The Secretariat thanked the participants for their constructive contribution to improving the report. He added that written comments were also welcome after the meeting and would be taken carefully into account when drafting the revised version of the report.

### **Eco-system approach**

57. Mr. Gabrielides started by recapping the background to the eco-system approach since it was adopted by the conference of Parties to the Convention on bio-diversity in 2000 with twelve additional principles and operational guidelines. He provided the definition, and recalled that the approach had been sanctioned by the Johannesburg Summit, which encouraged its application by 2010. Under the EC-MAP project, a working party had met twice in 2006 in order to draft a document which was finalised at a meeting of government-appointed experts held in February 2007. It contained recommendations addressed to the January 2008 Fifteenth Ordinary Meeting on the road map for the progressive application of the eco-system approach to the management of human activities in the Mediterranean, the ecological vision and the strategic objectives it implied. The next step, planned for 2008, would involve carrying forward work on the road map, deciding on management areas, pilot studies to be conducted, and then formulating SMART ecological and operational objectives, the latter each with an indicator. The eco-system approach would not be a revolution for MAP, rather an evolution which, whilst not undermining the various programmes and activities, would require the two processes to converge by integrating all aspects including the socio-economic ones in a new perspective based on healthy, productive and biologically diverse marine and coastal eco-systems.

### ***Presentation; The EU's marine strategy: a few words on the « indicators » under the new directive and on-going preparatory work (EMMA)***

58. Mr. Gert Verreet from Marine Protection in the EC's DG Environment, gave an outline introduction to the EU's directive on marine strategy which had just passed its second reading in the European Parliament and was now due to go before the European Council. The main aim of the directive was to achieve the good ecological state of marine waters by 2020 by creating marine regions and sub-regions to be managed in an integrated manner by the Member States according to environmental criteria. The Member States were expected to cooperate closely in drawing up the marine strategies for the waters in each marine region. Each marine strategy would comprise an action plan to be implemented in stages: evaluating the state of the environment and determining what actually constitutes a good ecological state before establishing objectives, indicators and monitoring programmes. Measuring programmes should be worked out by 2015. The marine strategies would follow an eco-system based approach to managing human activities in order to retain the collective pressure of such activities at an acceptable level. Finally, Mr. Verreet introduced the DPSIR approach and the corresponding indicators, and the essential contribution by the EMMA plenary and workshops in this field.

59. Mr. Civili recalled MED POL's contribution on behalf of MAP to the formulation of the European marine strategy to ensure that the Mediterranean perspective was properly taken into account. He stressed the fact that the marine strategy explicitly recognised that, for the Mediterranean EU Member States, the Barcelona Convention provided a well-adapted platform for the implementation of the strategy if such was the path the Member States would chose to follow to avoid duplication of effort. Moreover, for the non-EU-members, there would also be convergence with the eco-system approach being applied under the Barcelona Convention, since the structure and methodology were the same. Mr. Verreet confirmed this view, explaining that it was up to the Member States collectively to see within their regional framework how they could best organise their regional coordination and cooperation.

### **Indicators**

60. Mr. Fouad Abousamra, MED POL Programme Officer, introduced the question of indicators in the Mediterranean, as described in the report before the meeting on indicators of marine pollution, with reference UNEP(DEPI)/MED WG 321/Inf.7. He pointed out that this was becoming highly urgent for three reasons: the planned application of the eco-system approach within MAP, the imminent entry into force of the directive on the European marine strategy, and the requirement now incumbent upon the Parties to the Barcelona Convention to report on the state of implementation of the LBS Protocol, in other words, on measures taken to this end and how effective they had been and, for the Secretariat, to produce a two-yearly regional report on the subject.

#### ***Presentation: Ecological quality indicators in the Mediterranean***

61. Mr. Panayotis Panayotidis, HCMR (Greece), presented the numerous criteria to be met by ecological quality indicators, the DPSIR framework of indicators which provided a flexible and dynamic chain of cause and effect linking the origins and consequences of environmental problems, and the Water Framework Directive's statutory classification. He then detailed some indexes for zoobenthos (BENTIX index, S and H indexes, giving concrete examples of their use in the Saronic Gulf) and phytobenthos (Posidonia cover, the biotic index) and mentioned several case studies conducted in Greece, France and Italy.

#### ***Presentation: Synopsis of the marine pollution indicators in the Mediterranean (MPI)***

62. Mrs. Argyro Zenetos, HCMR (Greece), explained how for this questionnaire-based report on MPIs a scale of 0 (no existing or available data) to 3 (fully documented and drawn up indicator) had been produced. Having provided an overview of the chemical indicators and bio-markers, she then listed the ecological indicators and provided their ranking according to their extent in the Mediterranean, before reviewing them one by one: number of species (S), diversity of communities (H), alien species (more than 790 recorded to date in the Mediterranean, some 112 of which from the years at the start of this century alone. She demonstrated the relation of biological invasions with climatic changes and elaborated on the so-called 'tropicalisation' of the Mediterranean (hundreds of alien species – jellyfish, crustaceans, fish and even sharks were adopting to the new environmental conditions. She concluded that, as far as the chemical MPIs and bio-markers were concerned, the methodologies appeared to be uniform and standardised following the introduction of MED POL analysis procedures under the QA/QC protocols and intercalibration exercises but that, on the contrary, more effort needed to be put into harmonising the ecological indicators (definition of limits for the ecological classes, establishing reference stations, setting up databases).



63. One representative underscored the major contribution made since the coming into force of the Water Framework Directive by the Med-GIG working party (Mediterranean Geographical Intercalibration Group) on the now mandatory use of bio-indicators in the management of coastal and transitional waters, and particularly for characterising biological quality elements (BQE). The CIESM representative pointed out that work conducted by her organisation has produced several volumes on the subject that are regularly updated. Finally, several representatives asked for amendment of the MPI report currently under review since for certain countries some of the data was already outdated, and there were some gaps.

64. Mr. Abousamra replied that the report had been drafted to take stock of the issue and was action-oriented. It claimed neither to be exhaustive, nor to be absolutely scientifically exact, and no country should take umbrage at any errors which may concern it. It should be taken as a basis for programming action in the indicator field making headway according to the deadlines to be met (Framework directive, eco-systemic approach, MAP reporting system). There was therefore no reason to amend or update it. The proposal was that in the course of the next two year period, representatives should launch a capacity building programme on ecological indicators at regional level, grouping countries together in teams to ensure the best possible transfer of know-how and knowledge, with competent laboratories appointed in each country. This proposal was welcomed along with the planned group composition. The representative of Lebanon pointed out, however, that for special reasons her country was requesting that the group to which it belonged should be led by Greece with no individual cooperation with the other member countries.

#### **Agenda item 7: Other business**

65. It was agreed that the representative of CIESM should make a presentation under this agenda item.

#### ***Presentation: Background levels of <sup>137</sup>Cs on the regional scale and bottom-up data delivery***

66. Mrs. Alessia Rodriguez y Baena of the International Commission for the Scientific Exploration of the Mediterranean Sea (CIESM, Monaco), briefly mentioned the CIESM's two networks- Hydrochanges (measuring hydrological parameters) and Hydrogloss (systematic measurement of sea level). In her report on the organisation and activities of the CIESM's monitoring programme she highlighted the results achieved on background levels of <sup>137</sup>Cs in the Mediterranean and the Black Sea, a pollutant which was always of anthropogenic origin, and whose links with the 1986 Tchernobyl accident were known. She stipulated the aims of phase II of the programme, which basically consisted of understanding the geographical and temporal variability of trace and emerging contaminants and, more specifically, to complete <sup>137</sup>Cs geographic mapping, to determine the <sup>210</sup>Po concentrations in mussels, and to evaluate whether the concentrations found fell within the health risk thresholds.

67. Mr. Civili recalled that over the years MED POL had enjoyed fruitful cooperation with the CIESM and stated that he would be in favour of reinstating it on a more stable basis and being able to upload the monitoring data produced by the organisation into his database. Several delegates expressed interest in seeing a CIESM collaboration network set up in this field with the Mediterranean countries, particularly on capacity building and training matters.

**Agenda item 8: Conclusions and recommendations**

68. A summary of the conclusions and recommendations was drawn up by the Secretariat on the basis of the discussions and submitted to delegates for review. The summary was adopted by the meeting with some amendments. It can be found in **annex III** of this report. It was pointed out that the full meeting report would be drawn up by the Secretariat at a later stage and sent out to all delegates for review and amendment prior to its adoption.

**Agenda item 9: Closure of the meeting**

69. Mr. Paul Mifsud, MAP Coordinator, expressed his regret at having been unable to take part in the previous days' work as a result of other official obligations. He congratulated participants on their conclusions which sanctioned the lively scientific discussion which would serve MAP's future action, particularly regarding application of article 8 of the LBS Protocol on monitoring. A Compliance Committee was soon to take up its work, set up with the sole aim of helping the states meet their commitments. Mr. Mifsud invited the national representatives once back home to kindly remind their authorities that no more than a month lay between this meeting and two major events in the life of MAP which were set to take place in Spain: the Fifteenth Ordinary Meeting of the Contracting Parties from 15 to 18 January 2008 in Almeria, and the conference of plenipotentiaries on the ICZM Protocol in Madrid on 20 and 21 January 2008, a happy outcome for the region's sustainable development prospects.

70. After the usual courtesies the meeting was declared closed at 1330 hrs on Friday, 14th December.

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UNEP(DEPI)/MED WG.321/4

Annex I

Page 12

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## **ANNEX II**

### **Agenda**

- Agenda item 1.** Opening of the Meeting
- Agenda item 2.** Election of Officers
- Agenda item 3.** Adoption of the Agenda and Organization of Work
- Agenda item 4.** Scope and Purpose of the Meeting
- Agenda item 5.** Review of the elements of monitoring programmes
  - 5.1 Designing of monitoring programmes
    - 5.1.1 State and trend monitoring
    - 5.1.2 Compliance monitoring
      - a) Quantification of pollutant inputs
      - b) Health-related monitoring
  - 5.2 Sampling strategy
  - 5.3 Data Quality Assurance
  - 5.4 Data collection and reporting
  - 5.5 Data interpretation and utilization
- Agenda item 6.** Specific issues
  - 6.1 Biomonitoring
  - 6.2 Sediment monitoring strategy
  - 6.3 Eutrophication monitoring strategy and assessment
  - 6.4 Ecosystem approach
  - 6.5 Indicators
- Agenda item 7.** Other Business
- Agenda item 8.** Conclusions and Recommendations
- Agenda item 9.** Closure of the Meeting



## ANNEX III

### Conclusions and recommendations

- 1)** Given that the Contracting Parties are legally obliged to set up national monitoring programmes to systematically determine pollution levels along their coasts and to evaluate the effectiveness of measures adopted, it was agreed that MED POL, in conjunction with the countries concerned, should analyse all relevant issues still outstanding and make every effort to solve them, to ensure regular monitoring throughout the whole of the Mediterranean basin. For this purpose, meetings and other supporting measures could also be organised at national level, if necessary.
- 2)** Trend monitoring should continue in keeping with MED POL-Phase III, but with greater emphasis being placed on consistency in order to avoid variations which may mask real developments. It was felt that a manual needed to be drawn up at regional and national level. The proposal was also made to organise another training course for those who had been unable to attend previous ones.
- 3)** There is a need to evaluate inputs from diffuse sources. An appraisal of inputs from rivers and watercourses by order of magnitude will be conducted under the new GEF project, and atmospheric inputs will also be studied. As regards atmospheric deposition, it was stressed that MED POL should strive to use information from existing services and programmes such as EMEP, and will endeavour to develop programmes in the regions where no information is available.
- 4)** On monitoring related to health aspects, it was agreed that all countries should make every effort to apply the new standards and criteria approved for bathing waters in the Mediterranean. At the same time, the states shall submit national reports regarding their compliance. As for shellfish waters, the criteria and standards are the same as those applied by EU Member States; it was, however, pointed out that eating shellfish could present a health hazard due to the presence of phytotoxins, and that vigilance was needed in this respect.
- 5)** Common sampling strategies were deemed necessary to allow data to be compared. However, such strategies could simply cover the most important elements, and a certain degree of latitude should be built in at national level so that programmes could be organised according to each country's specific resources and needs. It was also emphasised that, since many Mediterranean countries may belong to more than one organisation, MED POL should strive to achieve harmonisation between the various conventions and organisations.
- 6)** Data quality assurance (DQA) is an essential aspect of monitoring work. It was recognised that taking part in intercalibration exercises does not in itself suffice to ensure good quality data, and that the laboratories should attach greater importance to good laboratory practices. Within the framework of DQA activities: a) existing reference methods should be revised as practical and reference methods for new contaminants, and sampling methodologies should be developed; b) training sessions should be organised on a national or sub-regional basis and all due attention should also be paid to the « sampling » component, new analysis techniques such as ICP-MS mass spectrometry and the analysis of new contaminants such as TBT and hydrocarbons ("fingerprints").

Regarding the other monitoring parameters (apart from chemical contaminants), the meeting reacted favourably to using the services of QUASIMEME for the eutrophication parameters

and those of Alessandria University (Italy) for the biomarkers. Participants in intercalibration exercises should, however, be issued with some form of certificate.

**7)** As far as capacity building is concerned, it was agreed that MED POL should continue to provide the states with assistance (particularly in the form of training, provision of equipment, accreditation of national laboratories, know-how, etc.) so that the objectives of the Mediterranean monitoring programme could be met.

**8)** The Secretariat reported the various problems encountered with uploading the data submitted by states into the MED POL database, and it was agreed that the countries should take greater care when filling in the data sheets. At the same time, the meeting was updated on the state of play of MED POL's Infosystem and various ideas to be borne in mind were put forward. It was concluded that contacts should be built up between the national experts and those of MED POL's Infosystem in order to clarify the procedures and that, if necessary, training courses should be organised.

**9)** The meeting reviewed the conclusions and recommendations of the Workshop on the biological effects programme (Alessandria, Italy, 20-21 December 2006). More specifically, it was agreed: a) that biological effects monitoring should be developed using a two tier approach with caged molluscs; b) that MED POL should encourage the development of bio-marker integration indexes for use by managers; and that c) MED POL should spare no effort towards harmonising the evaluation criteria with those of the Northern European organisations and conventions. During the debate it was recalled that the *Mytilus galloprovincialis* species is not available throughout the whole of the Mediterranean and that the Eastern Mediterranean states should therefore have the possibility of using other albeit common species.

**10)** The meeting reviewed the Sediment sampling and analysis Manual which it basically accepted, whilst pointing out that the sedimentation rate was an important factor in sampling design and that instructions should therefore be provided on the means to determine it. The document will be published and distributed to the countries and laboratories participating in MED POL.

**11)** The draft document entitled "MED POL eutrophication monitoring strategy: updated report and proposal for new indicators", was reviewed on the basis of comments received since the Palermo meeting, and was presented as the "Eutrophication monitoring strategy for MED POL". The document was approved in slightly amended form and will be distributed to the states.

The eutrophication evaluation document will be revised on the basis of the comments made during the meeting and information to be sent in by the countries in response to a questionnaire which is to be redistributed.

**12)** Bearing in mind the expected decision to apply the ecosystem approach, the EU's Marine Strategy and the MAP national reporting system, it was decided that MED POL would propose a programme intended to build the technical capacity of the laboratories to apply ecological indicators. The competent laboratories will need to be appointed in each country, and cooperation will be instigated between experienced laboratories and those undertaking this kind of activity for the first time.