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**MEDITERRANEAN ACTION PLAN**

Consultation Meeting to Review MED POL Monitoring Activities

Rome, 1-2 December 2009

**REPORT OF THE CONSULTATION MEETING TO REVIEW  
MED POL MONITORING ACTIVITIES**



## **Introduction**

1. The Meeting which, according to well-established practice, is responsible for reviewing MED POL monitoring activities every two years, was convened pursuant to the decision and Programme of Work adopted by the Fifteenth Meeting of the Contracting Parties in Almeria (Spain, January 2008).
2. The Meeting was held in Rome, at the headquarters of the FAO, on 1 and 2 December 2009.

## **Participation**

3. Representatives of the following Contracting Parties participated in the Meeting: Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, European Commission, France, Greece, Israel, Italy, Lebanon, Montenegro, Morocco, Slovenia, Spain, Tunisia and Turkey.
4. Fifteen invited experts were also present at the Meeting.
5. The Secretariat of the Mediterranean Action Plan (MAP) was represented by the MED POL Coordinator, the MED POL Programme Officer responsible for monitoring activities, and the Deputy Director and an expert from INFO/RAC. The MED POL Secretariat acted as the secretariat of the Meeting.
6. The full list of participants is contained in **Annex I** to the present report.

## **Agenda item 1: Opening of the Meeting**

7. Mr. Francesco Saverio Civili, MED POL Coordinator, welcomed the participants. He recalled that the present Meeting covered the traditional core of MED POL's activities, as it was devoted to the technical component of its programme, which had been set the basis for the monitoring of pollution in the Mediterranean since the beginning of the 1980s. It was also being held, as was customary, once every two years, immediately following each ordinary meeting of the Contracting Parties, in this case the Marrakech meeting held in November 2009, as in principle it was not called upon to examine political matters, but rather the technical and scientific aspects of the activities carried out during the course of the past biennium and, to envisage, for the next biennium those which had just been officially adopted in the new Programme Budget. However, developments in the regional context, as well as in MAP and MED POL, including for example the progressive adoption of the ecosystem approach, would lead to the adoption of new strategic orientations, which could make it necessary in future to hold the Monitoring Meeting before the meeting of the Contracting Parties at which they were to be adopted.

## **Agenda item 2: Election of Officers**

8. The Secretariat, following the usual unofficial consultations held with delegations before the opening of the Meeting, proposed the following list of Officers, which was duly adopted by the Meeting:

President:	Ms. Alenka Malej (Slovenia)
Vice-President:	Mr. Mustafa Terzhaz (Morocco)
Rapporteur:	Ms. Olfat Hamdan (Lebanon)

### **Agenda item 3: Adoption of the Agenda and organization of work**

9. Mr. Civili presented the Agenda (document UNEP(DEPI)/MED WG.343/1) and the Annotated Agenda (document UNEP(DEPI)/MED WG.343/2), which were adopted by the Meeting together with the attached timetable. In view of budgetary constraints, which limited the work of the Meeting to two days, and the extensive agenda, the Secretariat invited the participants to intervene concisely and effectively so that all the items could be examined. The Agenda of the Meeting is contained in **Annex II** to the present report.

### **Agenda item 4: Scope and Purpose of the Meeting**

10. Mr. Civili emphasized that, for the first time, a Monitoring Meeting would examine assessments prepared by MED POL with the assistance of external experts on the basis of the data collected in the context of the programme and integrated into the MED POL database. The programme was therefore entering its very concrete phase, with an impressive mass of results, sometimes obtained over long periods. Admittedly, the assessments highlighted many difficulties and shortcomings related to sampling, analysis, data entry, management and interpretation, as well as temporal and spatial coverage, as there were still countries that did not have monitoring programmes, or only partial or intermittent programmes. However, it was now necessary to continue to build on this promising basis. The objective of the Meeting was therefore, following the usual general examination of monitoring activities, to review and discuss three assessment reports on the state of eutrophication, the status of the marine and coastal environment in relation to the determination of hazardous substances, and pollution trends in marine biota resulting from "hot spots". The Meeting would discuss the results and the solutions to be adopted in relation to the shortcomings identified. It would also be examining issues relating to the collection and transmission of data and the implementation of the Data Quality Assurance Programme. There would also be presentations, one on the MED POL information system prepared by INFO/RAC, the second on the results of the MYTILOS, MYTIMED and MYTIAD campaigns, and the third on data exchange mechanisms in the context of the European Community and the European Environment Agency (EEA). Finally, the Meeting would be called upon to envisage future monitoring activities in the context of an exercise of reflection and prospectation that was only at its initial stages with a view to outlining a new MED POL strategy in this field.

### **Agenda item 5: Overall review and analysis of the implementation of monitoring activities**

11. The MED POL Coordinator recalled that monitoring was a costly activity which involved many actors. In addition, the current global economic context was difficult in this respect, with a reduction in funding at the national, regional and international levels. It was therefore necessary to raise the question of whether, in its current form, ongoing monitoring was adequate and well adapted to needs. Nobody doubted that it was an essential tool in the hands of decision-makers, but it had to be made as cost-efficient as possible. For example, he raised the issue of the results of the training that was being provided and its impact in terms of the performance of the laboratories. Moreover, if monitoring was to remain an indispensable tool, there was a point that could no longer be accepted, namely that certain countries did not participate, or only provided limited data. In this respect, it should be recalled that monitoring was a legal obligation under Article 12 of the Barcelona Convention and Article 8 of the "LBS" Protocol, as well as many recommendations adopted by the Contracting Parties in relation to MED POL Phases III and IV. In this context, during the past biennium, and in accordance with a decision adopted by the Contracting Parties in Almeria, a Compliance Committee overseeing countries' follow up to the obligations deriving from the Convention and its Protocols had been established and was now operational. Any failure to comply with obligations, and consequently any shortcoming in monitoring, could be referred

to it. The Compliance Committee did not have a disciplinary function, but was primarily intended to assist countries to resolve their problems.

12. One expert, while thanking the Coordinator for having summarized the essential points of MED POL's role, wished to add that it was now necessary to integrate a new perspective following the adoption in Almeria of the ecosystem approach and its application throughout MAP, which involved taking into account the four sub-regions in the assessments that were currently being undertaken. Monitoring activities therefore needed to be brought into coherence with this approach.

13. The Coordinator agreed that this was a very relevant point which the Meeting would have the opportunity to examine further. In the context of the road map adopted for the progressive application of the ecosystem approach, assessments had been launched in the four sub-regions defined in the Mediterranean Basin, and this approach would indeed gradually modify the scope and content of monitoring activities, in the same way as all MAP activities. This was a long-term, progressive and innovative process that was currently in its preparatory phase and which would make it necessary to reorient the programme around objectives which might sometimes differ broadly in order to respond to the specific characteristics of each sub-region.

#### **Agenda item 6: Data collection and monitoring**

##### *6.1 MED POL III and IV marine monitoring database*

14. Mr. Michael Angelidis, MED POL Programme Officer, reviewed the data collection, reporting and processing activities carried out since 2006

15. With regard to the participation of countries, financial agreements had been negotiated and concluded with ten countries for their national monitoring programmes. Also, with the exception of Cyprus and Slovenia, no new agreements had been negotiated with other European Union countries to undertake monitoring programmes in the framework of MED POL, although certain EU countries were reporting data sporadically. Ten countries had also been assisted in the context of baseline surveys of pollution throughout the basin using caged transplanted mussels. In addition, eutrophication projects had been financed in Montenegro and Morocco. The tables in the working document recapitulated the data reported to the MED POL database for the various parameters. They showed that certain countries reported their data regularly for several of the required parameters, thereby making it possible to prepare assessments, although there were major disparities between countries, as certain countries reported data, and then interrupted reporting, resulting in time gaps, while others did not report any data for long periods, resulting in geographical gaps. In general, the most complete data series concerned trace metals and organic contaminants in biota, while there were major shortcomings for other parameters. The message to be conveyed was therefore that there was a very rich and diversified MED POL database, but that it was incomplete in terms of preparing an overall and reliable regional assessment, and that one of the issues for the future was therefore to obtain contributions from all countries for this purpose. Consequently, the present Meeting needed to respond to two major issues: the reason for these gaps and the means of resolving them.

16. Mr. Dimitris Poursanidis, MAP consultant, described the principal problems encountered over the past three years in the collection, reporting and processing of data for the MED POL database: the designation of stations in a disordered manner or with disparate geographical coordinates, with the result that the same station could not be entered as such by the data processing system (for example, a designation ABC became A B C or A\_B\_C, which would not be recognized); the absence of the code for the reporting institute or differences with the code set out in the memorandum of understanding; the absence of intervals in concentrations; the inconsistent use of measurement units, or of units not

recognized at the international level, etc. These errors prevented the use of many data. It was therefore necessary to follow attentively the MED POL manual on the database and to ensure, insofar as possible, that similar sampling and analytical methods were used, that the parameters measured were also set out in comparable matrices, and that the participating institutes followed data quality assurance procedures.

17. During the ensuing discussion, many speakers congratulated the Secretariat on the quality and transparency of its assessment of the database and the shortcomings identified. Several speakers provided explanations of the problems that they were encountering at the national level: the inadequacy of the funding allocated by governments, the transfer or overlapping of competence between government departments or administrative services, and the lack of training in information technology for the EXCEL formats and files. In some cases, where data were not being reported, this did not mean that they were not available, but that they were not reported to the Ministry of the Environment of the country, which is the link to MED POL. Representatives of European Union countries indicated that they were bound by the Water Framework Directive and the Marine Framework Strategy Directive, that they had submitted a great deal of data in this context to the competent Community bodies and that it would be necessary to find a means of incorporating these data into the MED POL database and to seek consistency. The European Union and MAP could enter into discussions for this purpose. One country expressed surprise that its recent data had not been reported, as they did exist in practice. Three others announced that their data for 2008 and/or 2009 would be reported very shortly, and another indicated that a project had been launched by the Ministry to modify and rationalize the data reporting arrangements. Finally, most speakers recognized that there was undoubtedly a problem concerning the reliability of certain data as a result of the errors or omissions indicated by the Secretariat, or due to a lack of verification prior to reporting. In this respect, one representative proposed that an expert should be designated in each country with responsibility for coordinating data and collaborating with MED POL.

18. One wish expressed by all speakers, including two experts, was to request the MED POL Secretariat to give greater priority to feedback, or in other words, on each occasion that errors or omissions were observed when entering data into the MED POL database, to notify without delay the country and the related laboratory, make electronic contact with it and seek to identify the cause of the problem with a view to finding a solution. Admittedly, this had already been done by the Secretariat, but only episodically and in the most flagrant cases. Continuous dialogue should therefore be established between the Secretariat and the countries.

19. The INFO/RAC expert emphasized that when the MED POL information system, which would be presented later in the Meeting, become operational, many of the problems identified previously would be resolved automatically, as there would then be automatic feedback and correction of data if the information system was used for transmission.

20. Mr. Angelidis thanked the participants for their observations and the proposals that had been made by many of them. It was clear that the tables in the working paper were not definitive and it might even be said that they had been prepared to elicit reactions. They consisted of the information available when the paper had been prepared at the beginning of the autumn, and they would be updated on the basis of the new data reported and the rectifications indicated. The Secretariat had taken note of the shortcomings that could be attributable to it. It would appear however that more data were available than those that had been received in practice, but that was a problem that lay within the responsibility of the countries. The feedback called for by countries already took place, for example when the geographical data for the stations were not consistent. But the message had been heard that greater effort was needed in this respect and the Secretariat also expected a more sustained monitoring effort from the countries. Mr Angelidis undertook to contact countries on each occasion that a difficulty arose, and he called on the countries not to hesitate to contact him

in parallel: dialogue had to be two-sided to be really beneficial. Moreover, once the information system was on line, dialogue would be spontaneous.

21. At the conclusion of the discussion, a representative called for Table 2.2 in the working paper to be corrected and updated on the basis of the new elements provided by the countries.

22. Mr. Civili, with reference to the exchange of data with the European Community, recalled the efforts made by the Secretariat with a view to harmonization, which had not really met with full success. A precise agreement had been reached with the European Environment Agency (EEA) for the sharing of EIONET data, and MED POL had duly provided its data. In this context, MED POL had envisaged converting a secretarial post into a full-time information technology post with a view, among other objectives, to contributing to resolving certain problems and being able to contact countries at any time. With regard to the ownership of data by countries, governments needed to understand the value of data for their decision-making processes and appreciate their obligations towards the Convention and the Protocols. The lack of data was sometimes due to failings by governments, which did not allocate sufficient funding, or considered that the modest assistance provided by MED POL was sufficient to justify refraining from taking action themselves. Work needed to be undertaken to raise the awareness of certain administrations.

23. The President, speaking as the representative and former national MED POL Coordinator for Slovenia, indicated that she had witnessed the significant efforts made by the Secretariat to achieve harmonization with the European Community. She added that Mediterranean countries which were members of the European Union could use their influence with Brussels to induce similar steps from the Commission.

#### 6.2 *Data quality assurance in the determination of hazardous substances*

24. Ms. Emilia Vasileva-Veleva, Marine Environmental Studies Laboratory (MESL/IAEA), recalled the mission of the MESL, which had been established in Monaco for 30 years. Its mission was to carry out a data quality assurance programme for the data compiled on chemical contaminants in the context of MED POL and to maintain and improve the reliability of the results of analytical measurements. She described the components of the programme: the organization and evaluation of intercomparison exercises and proficiency tests to examine the performance of laboratories (organic contaminants and trace elements in marine samples), the provision of certified reference materials, expert services for the acquisition of instruments for analysis, training courses for the analysis of chlorinated pesticides, PCBs and heavy metals in marine samples and the publication of reference methods (currently numbering 56). During the period 2006-2009, three inter-laboratory studies had been undertaken, three analytical performance studies, a proficiency test and eight training courses, with a total of 47 participants from 16 Mediterranean countries. In general terms, participation by countries was satisfactory, although the MED POL Focal Points needed to ensure that all the laboratories associated with the national monitoring programmes in their respective countries participated in the proficiency tests.

25. Ms. Vasileva-Veleva presented a table evaluating all the performances based on the so-called system of "z" scores, or the percentage of outliers. The table showed that the laboratories with the best performance (groups 1 and 2) represented 64% and 19-28%, respectively, of all the participating laboratories, with a slight improvement in the percentage of outliers over the period under examination (for example, for PCBs, the figures were 6% in 2004 and 10% in 2008, after peaking at 38% in 2005). For each laboratory participating in the tests and exercises, a detailed analysis report on its data quality was sent to it and emphasized potential sources of errors. The inter-laboratory comparisons showed that, for under-performing laboratories (groups 3 and 4), more active feedback and follow-up was required to improve the quality of the analytical data provided; one possible solution could be

regular assistance missions, which evidently raised the issue of cost. Based on the questionnaires distributed at the training courses, the participants had expressed the wish for additional training on chemical metrology, the evaluation of uncertainty, the traceability of measurements, the use of reference materials and the validation of methods. Ms Vasileva concluded that, at the present time, it was difficult to assess the extent to which the scientists trained in training courses in Monaco had contributed to the improvement of their respective laboratories upon their return.

### 6.3 *Data quality assurance in the determination of nutrients*

26. Mr. Angelidis reported on the intercalibration exercise undertaken in 2008 to determine the parameters of eutrophication (nutrients and chlorophyll a) using the services of QUASIMEME, for which MED POL had financed the participation of 15 Mediterranean laboratories. He informed the Meeting that a new intercalibration exercise was under preparation for 2010 with the assistance of QUASIMEME.

### 6.4 *Data quality assurance for biomonitoring*

27. Professor Aldo Viarengo, Dean of the Faculty of Sciences of the University of Eastern Piedmont (Alessandria, Italy), responsible on behalf of MED POL of the Data Quality Assurance Programme for biomonitoring, first recalled the reason for which there was a need for biomonitoring data. He emphasized that it was not a subsidiary programme, as it was necessary to determine whether the environment was safe for marine life and, for this purpose, to indicate the chemicals present in the environment and compare them with the biological effects. In this way, it was possible to obtain the maximum amount of information at a minimal cost by using sentinel organisms, such as molluscs, and biomarkers to assess the stress syndrome resulting from pollutants on these organisms. Stress biomarkers covered a broad range of environmental pollutants, including the stability of the lysosomal membrane, the frequency of micronuclei, lipofuscin accumulation and the "stress on stress" syndrome. Another category of so-called exposure biomarkers reflected the response of organisms (such as their content in metallothionein) to a specific chemical (Cd, Hg, Cu).

28. The data quality assurance programme for biomonitoring had consisted of: (1) distributing a MED POL manual on the use of biomarkers; (2) disseminating a video prepared by RAMOGE in collaboration with MED POL (3) organizing training courses to prepare researchers for participation in future biomonitoring programmes; and (4) organizing an intercalibration programme, the first ever undertaken to standardize biomonitoring data, under the terms of a new agreement concluded between MED POL and DiSAV, with the participation of Mediterranean and northern European laboratories (OSPAR and HELCOM). The one-week training course was held every two years.

29. Over the past three years, 17 laboratories from 18 coastal countries had contributed to the biomonitoring of the Mediterranean coast based on model protocols for the collection of organisms (particularly *Mytilus spp.*), their transfer, the storage of biological samples, the choice of biomarkers and the reporting of data to MED POL. In addition, three laboratories (Alexandria in Egypt, Lattakia in Syria and Casablanca in Morocco) had been equipped to assess the stability of the lysosomal membrane. Following the intercalibration exercises in 2006 (stress and exposure biomarkers), the MED POL and ICES laboratories had been associated with the 2009-2010 exercise. This exercise had commenced in October 2009 and the results were expected in March 2010, with preliminary data already being received from three laboratories on the frequency of micronuclei and lipofuscin content. Professor Viarengo emphasized the importance for the future of training courses in Alessandria, intercalibration exercises to validate the data and identify difficulties, and the value of twinning projects between laboratories on the northern and southern shores of the Mediterranean to undertake research activities in the field of the biological effects of pollutants, thereby improving the quality of the biomonitoring programme in the Mediterranean.



30. The presentations made and the deriving discussions on data quality assurance (DQA) provided an opportunity for speakers to raise a number of specific issues. Firstly, it was essential to indicate the context from which samples were taken, and not only to enter data into the EXCEL files without providing a report, in the absence of which, it was difficult, for example, to explain abnormally high values. The DQA process needed to begin at the laboratory from the outset, and not at a later stage. It was also necessary to diffuse the results of DQA in a positive manner, and clearly indicate the high performance laboratories which could serve as models. The publication and dissemination of the results by countries could be useful in this respect. Emphasis was placed on the role that should be played by MED POL Focal Points, who could be informed of the results of monitoring and of DQA for their respective countries so that they were in a position to ensure follow-up in relation to the laboratories concerned. The methodology advocated by MED POL had been formulated in 2000 and it was now time to update it, as certain results changed due to modifications in organization and methodology. One representative considered that there was an inherent problem in the system: countries which fulfilled their task of collecting and reporting data often neglected the final objective of their work, namely to assess the quality of the marine environment, which they should begin to do by themselves without waiting for the Secretariat to react. Finally, several speakers supported the idea proposed by Professor Viarengo of promoting twinning arrangements between laboratories in the North and the South.

31. In conclusion, Mr. Angelidis observed that everyone recognized the importance of DQA and that the ideas expressed could contribute to improving the current process. Several of the questions raised called for comment. The publication and dissemination of results would without any doubt encourage countries to improve the quality of their data. The role of the Focal Points was indeed essential and had not really been fully exploited as it should have. Follow-up was required. The objective was not to point the finger at under-performing laboratories, but to help them, where necessary, by providing assistance on the spot. With reference to a question concerning the possibility of validating a list of competent laboratories, Mr Angelidis considered that this was a delicate matter but, if the idea were accepted by the countries themselves, it could be useful as a promotional measure.

## **Agenda item 7: Assessment of the state and trends of pollution**

### *7.1 Eutrophication assessment*

32. Mr. Antonio Cruzado, expert from the Spanish National Research Council (CISC) and MED POL consultant, recalled the concept of eutrophication: it is a well-defined phenomenon in coastal lakes and marine areas, and research projects into it had been undertaken since the 1970s. It consists, in a given area, of greater inflows than outflows of nutrients. It was therefore necessary to make a distinction between the monitoring of eutrophication and that of nutrients and chlorophyll-a in coastal areas, which he would cover in his intervention. The MED POL data base covered 3,712 reported samples, with 255 stations visited in total, and monitoring at very variable frequencies of from one to 252 samples for the period 1999-2007. The geographical location of the stations showed a grouping around certain sites that were not necessarily subject to eutrophication. Remote sensing, which had developed greatly over the past 30 years, could provide valuable information, even with a low resolution, particularly for the coastal impacts of the outflow of rivers and water courses.

33. Mr. Cruzado then examined each of the eight countries that had contributed to the MED POL programme for the monitoring of eutrophication and noted the difficulties encountered with certain data sources, the very high values of which often indicated their proximity to effluents. Values had even been provided which greatly exceeded those that would have been expected in "hot spots", and it was therefore necessary to re-evaluate them and to ascertain with the reporting institutes whether there were any shortcomings in their analysis. In addition, the geographical location of certain stations suggested that they were

frequently grouped around sites for reasons that were not related to potential eutrophication, but were of a practical nature, such as the presence of an institute capable of making the necessary measurements. It was therefore difficult to understand the values unless the context was known.

34. In conclusion, Mr. Cruzado indicated that the Mediterranean as a whole was not subject to greater eutrophication, as one of its major characteristics was the relative oligotrophy of its waters. However, certain well-defined sites, exposed to substantial inputs of nutrients of human and sometimes of natural origin, were liable to experience an average to serious level of eutrophication if measures were not taken to control at least the run off from agriculture, industry and waste water ("cultural eutrophication"). These coastal areas were in particular located near to outflows of major rivers, such as the Rhone, Ebro, Po, Aliakmon, Seyhan and the Nile. A further distinction still needed to be made between these areas in terms of the local hydrodynamic conditions, which affected the receiving capacity of the water mass and could, when active, facilitate the dispersion of nutrients..

#### 7.2 *Assessment of the state of the marine coastal environment: Hazardous substances in sediments and biota*

35. Professor Joan Albaiges, Department of Environmental Chemistry, CID-CISC (Barcelona, Spain) and MED POL consultant, presented the evaluation prepared with the collaboration with Mr Jordi Pron and Ms Carla Murciano based on the MED POL database of hazardous substances. Emphasis had been placed on sediments and biota, the media which best reflected the state of the environment. Only data which were representative had been used, and care had been taken to make use of sufficiently substantial time series of data. Accordingly, for trace metals in sediments, which had appeared suitable for a regional assessment, 17,000 samples had been retained out of 26,000. The parameters had been selected on the basis of the total number of samples and their temporal and geographical scope, and the biota selected were essentially *Mytilus galloprovincialis* and *Mullus barbatus*, the two species most commonly studied in the Mediterranean. With regard to the parameters, the metals of greatest concern (Cd, Hg, Pb, Cu) had been retained and, among the chlorinated hydrocarbons, DDT, PCBs, as well as the most representative POPs, and to a lesser extent Drins, HCB and lindane. In total, 28,120 samples taken by over 400 stations between 1999 and 2007 had been included in the assessment, which contained three sections: (1) trace metals in sediments and biota, chlorinated pesticides and PCBs in biota; (2) risk assessment; and (3) time trends.

36. Mr. Albaiges reviewed the tables and indicated the median values, with their variation intervals, for trace metals in sediments and in *Mytilus galloprovincialis*, and for chlorinated compounds in *Mytilus galloprovincialis*, in the four sub-regions of the Mediterranean corresponding to those provisionally approved for the application of the ecosystem approach. With a view to describing the quality status of the sediments and assessing any harmful effects in biota, the concentrations measured in the two compartments had been assessed on the basis of the evaluation criteria adopted by OSPAR in 2009. With regard to time trends, there were very few countries in which programmes had been established for at least five years, which would meet the requirements for such an assessment. In general, the median values by country did not show clear trends for metals. Nor were there clear individual trends for the stations that were representative of the various subregions, allowing at the very most the conclusion that concentrations were relatively constant or decreasing, although this was clearer in the case of Cd than Hg. Over the same period 1999-2007, the French monitoring network also showed a decrease in the concentrations of trace metals in *Mytilus galloprovincialis*. A similar table showing a decrease could be seen for DDT, with the exception of one country which probably retained stocks of these obsolete pesticides. It was essential to establish monitoring programmes in more countries to overcome the existing geographical gaps and to pursue efforts for the assessment of regional trends. In conclusion, Professor Albaiges recommended that environmental assessment criteria (EAC) be

developed and introduced in the Mediterranean for the hazardous substances included in the MED POL database: trace metals, chlorinated pesticides and PCBs.

### 7.3 *Assessment of pollution trends in marine biota from hot spot areas*

37. Mr. Robert Precali, Marine Research Centre (Rovinj, Croatia) and MED POL consultant, recalled that the monitoring of specific time trends for sites in the context of MED POL Phases III and IV had given rise in 2003 to a first assessment to identify sampling and analytical variances, and that in 2005 an attempt had been made to identify problems related to the sampling strategy. The present assessment, which constituted a step forward in the identification of trends, was focussed on trace metals, and the country assessments had been transmitted to the national authorities and laboratories concerned. After ten years of the trend monitoring programme, certain countries still did not have valid and continuous data covering at least five years, which was the length of time necessary to identify trends, and only the conformity of in-year variances to threshold values could be monitored. For countries with more than five years of continuous data, there was a software suite "Trend-Y-tector" (RIKZ Institute) and a battery of tests to identify trends (Mann-Kendall, Lowess smoother). Only data quality assured data had been presented and commented upon.

38. The expert presented the results of the seven countries retained for the assessment. He noted, among the problems encountered: that in several cases the location of sampling sites had been changed (Albania, Cyprus, Croatia, Tunisia) to bring them closer to urban centres and hot spot areas; that sampling had been carried out in different seasons (Cyprus, Tunisia); and that the fish population studied was not always the same (Turkey). A rigorous strategy needed to be adopted for the selection of the sampling period during the period prior to the reproduction of organisms. In the Eastern part of the Mediterranean, where a longer time series of data were available (Israel), Cd presented a decreasing trend between 2001 and 2007, while during the same period Hg concentrations increased. However, in relation to the Hg increase, Prof. Herut emphasized the need to have a consultation for clarifying the national data soundness and hence the related trend analysis, in order to avoid misinterpretations as is the case. In one country, the strict application of the sampling strategy adopted had made it possible to assess trends in a more valid manner (Slovenia).

39. With a view to overcoming the problems, countries were invited to draw up a detailed and clear methodological manual as a basis for maintaining their programme over time (location of stations, sampling strategy, processing of data) and to make use of the software suite "Trend-Y-tector", which was easy to apply for trend assessment.

40. During the discussion of state and trend monitoring, the speakers congratulated MED POL and the authors of the reports on the scientific level and the serious nature of the assessments, calling for the participants to be provided with this very useful work in its integral form in hard copy or on CD-ROM. With regard to the difficulties encountered in the exploitation of data, several observations were made. With regard to length stratified sampling, there was now an increasing disparity in the Mediterranean within the same species, with the result that it was impossible to keep samples of the same size that had been selected several years previously. The Secretariat was called upon to allow the countries time to improve their DQA, which was in any case a long-term process. With a view to countries making use of their own data, it would be useful for assistance to be provided for the training of statisticians. A new up-to-date manual on sampling for trend analysis would also be welcome so that standardized procedures could be followed. A further question concerned why DDT was still present despite its prohibition. It was also emphasized that all of the data and trends observed for the period 1999-2007 described a situation which had undoubtedly already changed. For example, countries had very recently introduced new binding legislation that was already in force requiring municipal authorities with 100,000 or more inhabitants, and in certain cases as of 10,000 inhabitants, to establish waste water treatment plants. Consequently, the choice of certain stations was no longer representative.

The call made by Professor Albaiges for environmental assessment criteria for the Mediterranean was supported by three speakers, two of whom called upon the Secretariat to appoint a group of experts to reflect on this issue. One representative considered that caution should be exercised in trend assessment of biota as they were subject to the influence of numerous environmental factors, and the assessment of sediments was more stable and reliable. With regard to eutrophication, one expert proposed that use should be made of the work carried out on environmental criteria in the context of the Water Framework Directive, and that for MAP as a whole the obligations deriving from the adoption of the ecosystem approach should not be neglected. It was also necessary to determine the conditions for a MED POL strategy for the collection and reporting of data for rivers and water courses, which would be included in the overall monitoring strategy. With regard to trend monitoring, it was proposed that it should be combined with biological indicators, which could constitute a step forward towards the application of the ecosystem approach.

41. In its reply to the issues raised and the proposals made, the Secretariat admitted that the existing monitoring manual was several years old and that it undoubtedly needed revision. Moreover, the idea that each country should prepare its own manual based on its specific conditions was also sensible. With regard to the distribution of copies of the full versions of reports, it was emphasized that reports could not be completed without first receiving formal comments from the Parties, with the reports then being finalized with the agreement of the countries. With reference to the establishment of a small working group on environmental assessment criteria, as recommended in the Albaiges report, the Secretariat was fully in favour, although the criteria would have to be discussed with the MED POL Focal Points. In relation to the monitoring of rivers and water courses, the concept was as follows: to gradually move away from traditional monitoring with the regular updating of values for input sources (the national baseline budget of emissions and releases=NBB), while continuing other forms of monitoring for the overall assessment of the state of the environment. The ecosystem approach made this necessary and the quality of water in estuaries should be included in the MED POL assessment strategy. Once again, emphasis should be placed on the significance for MED POL of the three assessments that had just been presented. A first regional assessment was now available, which needed to be further developed and corrected: this was a major step forward.

42. Returning to the proposal for the twinning of laboratories, which was deemed to be excellent, the Secretariat indicated that this proposal had first been made many years before but it failed as the initiative needed to be fully taken up by the countries themselves which did not happen. The Secretariat would endeavour to relaunch the idea. The monitoring manual required revision, which should include status and trend monitoring. The efforts that countries indicated that they were ready to make to review and improve the quality of their data augured well for the continuation of the monitoring programme and the Secretariat would tidy up the data base to make it more sound and to exclude outlying values and other errors of analysis and reporting. The working paper would be reviewed, taking into account the observations and the corrections and additions suggested.

43. The experts provided clarifications in reply to the technical issues raised by the participants: the number of points necessary for trend analysis - around 20 over ten years; the presence of DDT in certain countries despite its prohibition - DDE was a very persistent metabolite and dicofol a related product obtained through the chlorification of DDT, which was still permitted in certain cases; the causes of contradictory trends for trace metals - the lower level of Cd could be attributed to a reduction of pollution through soil flushing (less rainfall) and the increase in Hg in the western Mediterranean was to be explained, on the one hand, by the significance of natural loads in addition to anthropological loads and, on the other, through the process of bioamplification through the growth of organisms and the structure of trophic networks; the increase in Hg in bivalves in the eastern Mediterranean had been seen to be dependent on the period covered, and even so the highest values found were lower than the admitted standards; the higher level of reliability of sediments than of

biota, as claimed by one participant for trend assessment, was not at all borne out by the scientific literature; for the analysis of sediments it was necessary for there to be positive sedimentation, as otherwise sampling only covered old layers, which were not representative of the present environment; and, finally, the reports tended to refer to *Mullus barbatus*, although a large amount of data was available concerning other species and *Mullus barbatus* showed specific behavioural trends that needed to be taken into account.

#### **Agenda item 8: The MED POL information system**

44. Mr. Paolo Guglielmi, Deputy Director of INFO/RAC, briefly reviewed the background of the Centre, which had been established by the Meeting of the Contracting Parties in Antalya in 1993, and was supported by the Sicilian Region. The Centre had first focussed on the application of remote sensing in the Mediterranean, and then had been converted in 2003 into a Centre more specifically focussing on information and communication for MAP as a whole. It had been responsible for many achievements in this field for certain Regional Activity Centres, and in particular for the establishment of a MED POL information system. The Centre would be administered by the Italian National Centre for Environmental Protection and Research (ISPRA), as from 1 January 2010.

45. Mr. Marco Montuori, INFO/RAC expert, made a practical demonstration on screen of the various functions of the MED POL information system, which would become operational in the first quarter of 2010: connection, welcome page, access to the MED POL database, search for stations (the list for all countries) with their designations, geographical positions for each country, samples for each station with pollutants and reference years, the corresponding values, values per station (historical tables by column), search for stations by type with their year of commencement and termination. The system also allowed the extraction and loading of data and their immediate integration into a report or on SIGWEB/Google Earth to visualize them geographically and zoom onto a specific area, giving the position of stations, the pollutants measured and the proportional representation of their respective values. There was also a section to search for reports and to verify, supplement or add to them as the user country, with a message appearing in the event of errors. Mr. Montuori explained that the system was modular, or in other words a function could be added (such as transmission to another body, for example the EEA). The system was currently at the stage of a final prototype and was ready to be tested. Once tested, it would be open and on line.

46. At the proposal of the Secretariat, it was agreed by the participants that the prototype would be sent to the MED POL National Focal Points so that they could distribute it to the persons concerned. A discussion arose concerning the policy for access to and the confidentiality of data. It was recalled that an official MAP document on data policy already existed and that it had been adopted. However, the Meeting agreed that, when sending out the information system for testing, the data policy document would be also attached for possible further comments.

#### **Agenda item 9: Specific issues**

##### *9.1 MYTILOS, MYTIMED and MYTIAD baseline studies*

47. Mr. Bruno Andral, Environment Resources Laboratory/IFREMER-Mediterranean, described the results of an initiative that had already been presented in its first phase at the MED POL Monitoring Meeting in Palermo (2005). Twenty institutions from 16 Mediterranean countries had participated in this programme, launched by IFREMER in 2003 and supported by, among others, the European Union (INTERREG III) and MED POL. Between 2000 and 2009, the programme had involved twelve cruises along the coasts of the various Mediterranean basins to install cages of mussels at a depth of between eight and ten metres for a period of three months and then for their recuperation, all of which was undertaken in

accordance with standardized protocols. The studies carried out on the mussels that were recuperated covered 48 chemical compounds, ranging from Cd, Hg, Ni, PCBs and TBTs to emerging pollutants. To compensate for the unequal presence in the Mediterranean, and even the rarity or absence in certain areas, of *Mytilus galloprovincialis*, a method had been used for the transplantation of mussels which made it possible to monitor the origin, age and stage of sexual maturity of the samples. As the bioaccumulation factor depended on the growth of the mussel in relation to various environmental factors, a biometric parameter had been used to correct the initial data and allow reliable comparisons. The recuperation rate for the mussels was 80 per cent.

48. As an understanding of the future of contaminants required a systematic and integrated approach, the project included modelling of the circulation of the water mass, sediment transport, exchanges across interfaces, trophic chains and in situ measurement methods and instruments. The gross concentrations indicated that growth had important impacts on the distribution of results, particularly in the case of trace metals. With regard to geographical variations, data had been analysed for each basin, and the full interpretation of the results was envisaged at the end of the project. The level of contaminants in the north western basin (PAHs), the Aegean Sea (PCBs and DDT), the Syrian and Lebanese coasts (Cr) and the Adriatic (PCBs) showed the importance of major towns, industrial areas and major rivers as sources of pollutants. The values for DDT and DDE were higher in the Tyrrhenian Sea, and those for PCBs in the Adriatic. The project had demonstrated the operational viability of the method used at the level of the basin as a whole and the value of the results obtained in relation to their cost. These artificial stations of mussels showed a significant convergence with the results presented by previous experts. Following the presentation, Mr Angelidis emphasized that MED POL had been in favour of the initiative from the outset and that it would continue to provide support.

### 9.2. *Marine pollution indicators*

49. Mr. Angelidis reviewed the historical background of marine pollution indicators (MPIs). The Twelfth Meeting of the Contracting Parties in Monaco in 2001 had requested MED POL to examine and formulate a series of marine pollution indicators (MPIs) and the Meeting of MED POL National Coordinators, held in Barcelona in May 2005, had adopted the strategy for this purpose. The two new Framework Directives on Water (WFD) and the Marine Environmental Strategy (MFSD) required the Member States of the European Union to achieve "a good environmental status" in their marine waters by 2021. As Mediterranean countries that were not members of the European Union were progressively adopting a comparable methodology for the assessment of the environmental status of their transitional and coastal waters, a workshop had been organized in October 2009 to review the progress achieved in the context of MED-GIG. In addition, MED POL was participating as an observer in four working groups entrusted with defining descriptors of good environmental status (maintenance of biological diversity, acceptable level of non-indigenous species, sea-floor integrity), which were working within the framework of DG ENV, and intervened more specifically on chemical indicators. According to a MED POL report on the state of the art of Marine Pollution Indicators in the Mediterranean (2007), most countries in the region were well advanced in measuring parameters for chemical indicators, while more work was needed for most countries to monitor parameters for ecological indicators and biological effects indicators. Also, the methodologies used in the Mediterranean region for chemical MPIs and biomarkers, were harmonized and standardized as a result of the intercalibration procedures established by MED POL, although much still remained to be done to harmonize ecological indicators.

### 9.3. *Data exchange with the EEA for assessments and the role of WISE-Marine in the Marine Strategy Framework Directive*

50. Mr. Neil Holdsworth, Head of the Data Centre of ICES, presented a table of the various procedures for the exchange of data with the European Union, and particularly the EEA, based on organizational charts. The European Environment Information and Observation Network (EIONET) was a partner network of the EEA and its Member countries and cooperating countries. The EEA was responsible for developing the network and coordinating its activities. For this purpose, the EEA worked in close collaboration with the National Focal Points, whose task was to coordinate networks of National Reference Centres (NFCs), which brought together around 900 experts in over 300 national institutions and other bodies processing environmental information. EIONET covered five European thematic centres working in the fields of water, air and climate change, biological diversity, resource and waste management, soil and water use and spatial information. The particular objectives were to meet the requirements of the European Union Water Framework Directive and Marine Strategy Framework Directive. Another information system was WISE-Marine, which was the marine water component of an existing Community instrument, the Water Information System for Europe – WISE, which collates the data and information collected at the European level and makes possible the exchange and viewing of information through an Internet portal, as well as rapid action, particularly when pollution was reported. With a view to meeting the requirements of the Marine Directive, Commission working groups had been established, one of which was responsible for determining the modalities of WISE-Marine. The European Marine Observation and Data Network (EMODNET) was intended to improve the availability of high-quality data. In the context of a road map and prospective analysis undertaken by EMODNET, the European Union had launched preparatory activities in 2009 involving the creation of pilot components with the general objective of achieving the migration of fragmentary data into a flow of data on the maritime basins that was interoperable, continuous and accessible. The Chemicals module had a Mediterranean component.

51. The discussion that ensued offered the opportunity for speakers to welcome the contribution made by the presentations, both in terms of new monitoring objectives with a view to the application of the ecosystem approach throughout MAP, and the value of the campaigns carried out over the past five years in the Mediterranean and finally the possibilities for the exchange of data with other institutions and initiatives that were operating in the region. The presentation by Mr Holdsworth had raised the issue of the MED POL policy concerning data. According to one expert, it was necessary to reinforce the flow of data and to ensure that it went in both directions. This was a decision that needed to be taken without delay. All the bodies and mechanisms concerned – MED POL, EIONET, EEA, WISE-Marine, etc. – were urged to work on a protocol agreement. It was high time that formal agreement was reached between the Secretariat and the European Union's exchange mechanisms, without it being necessary to duplicate data.

52. The Secretariat, expressing agreement with the need to reinforce the flow of data with other institutions, recalled once again the obligations incumbent upon the Contracting Parties under Article 8 of the "LBS" Protocol, which included the requirement to communicate data officially to the Secretariat. This was a legally binding and non-negotiable requirement in any agreement that was made. The establishment of the Compliance Committee would provide an opportunity to remind countries of this essential issue.

#### **Agenda item 10: Towards a new MED POL marine monitoring strategy**

53. Under this item of the agenda, the Secretariat presented Chapter 7 of the working paper (UNEP(DEPI)/MED WG.343/3), which outlined a possible future monitoring strategy in the region, taking into account the results of current activities, the issues at stake including the application of the ecosystem approach, the requirements of the "LBS" Protocol, the international context and real existing capacity. Until recently, MED POL had been the only actor in the field of monitoring at the regional level. But this was no longer the case. There were now new actors, with significant resources, in a new external legal context, essentially

emanating from the European Union. Moreover, MAP had itself integrated new concepts, such as the ecosystem and holistic approach, adopted in Almeria in 2008, which made it necessary to review its role and better integrate all its activities.

54. Mr. Angelidis recalled the broad steps outlined in the road map towards the application of the ecosystem approach adopted in Almeria, which included the revision of existing monitoring programmes for ongoing assessment and regular updating of targets. In addition, the Contracting Parties had decided to strengthen cooperation and seek synergies with initiatives pursuing similar environmental objectives, including the European Union Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD), with a view to achieving a shared vision of the Mediterranean, as defined in the decision adopted in Almeria concerning the ecosystem approach. Within the Mediterranean region, there was clearly the political will and the possibility to harmonize strategies for the protection of the sea, including ongoing assessment and the monitoring of the ecological situation and pollution trends. It was necessary to provide the statistics and assessments that were required by decision-makers to fulfil their new commitments and to adapt MED POL programme accordingly. In conclusion, Mr Angelidis considered that there was convergence in the approaches adopted by the Barcelona Convention and the European Union and that, in order to provide a firm basis for this, the new MED POL strategy needed to be based on the monitoring of representative water bodies, including "hot spots", with a view to assessing the quality of the coastal marine ecosystem.

55. During the discussion, the speakers recognized that the new strategy outlined above was pertinent in its concern to achieve harmonization and ambitious in its objectives, which implied a long-term effort and human and financial resources that MED POL could clearly not provide on its own. Priority therefore needed to be given to the mobilization of funding. The resources that the European Community would be making available were very significant in terms of the strengthening of capacities, which was an essential aspect in view of the disparities that had been noted by the present Meeting, starting with the analysis and processing of data. At the international level significant funding would also be devoted to the issue of climate change, and approaches needed to be adopted to take advantage of this opportunity in implementing within the MED POL Programme climate change-related activities. It was therefore important to find areas of agreement between the European Community and the Secretariat and to avoid the duplication of efforts.

56. During the discussion, a number of issues related to the future strategy of MED POL were also raised: (1) the synergy between MED POL and the Dumping Protocols, for which it was entrusted with responsibility in collaboration with the London Convention and Protocol; (2) the problem of the exchange of marine waters with the Atlantic (with the impact on hot spots) and the Black Sea; and (3) the monitoring of atmospheric pollution and its important impact on the sea.

57. Mr. Civili thanked the participants for their numerous proposals, which meant that many elements of the new strategy were already available with a view to the next meeting of the Contracting Parties in 2011. The question of funding was essential. Funding existed, but it was necessary to find the right way of gaining access to it in a coherent manner, based on solid files, with the competent institutions. In the context of the new GEF Partnership, a full-time staff would be recruited in 2010 to bring countries into contact with funding opportunities. With regard to the London Convention/Protocol, MED POL was engaged in regular collaboration, which had taken the form of the organization of a joint workshop in Italy in 2009. The same applied to the Basel Convention and certain of its regional centres. With reference to the monitoring of atmospheric pollution, it was true that the network had not been fully developed, but this effort would be re-launched and extended.

#### **Agenda item 11: Other business**



58. No other business was raised under this agenda item.

**Agenda item 12: Conclusions and recommendations**

59. The Secretariat presented draft conclusions and recommendations which it had prepared on the basis of the discussions during the Meeting. The draft text was examined and approved. The report of the Meeting would be sent out later, also for examination and approval, with the finalized conclusions and recommendations attached (**Annex III** to the present report).

**Agenda item 13: Closure of the Meeting**

60. The Secretariat thanked participants for their active and constructive contribution to the discussions, which would enable the Secretariat to commence the programme of activities for the next biennium with clear guidance and to envisage the new monitoring strategy that was to be prepared on a basis that was already substantial.

61. Following the usual exchange of courtesies, the President closed the Meeting on Wednesday 2 December 2009 at 5.45 pm.



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**ANNEX II****Provisional 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.** Overall review and analysis of the implementation of monitoring activities
- Agenda item 6.** Data collection and reporting
- 6.1 MED POL III and IV marine monitoring database
  - 6.2 Data Quality assurance in the determination of for hazardous substances
  - 6.3. Data Quality assurance in the determination of nutrients
  - 6.4. Data Quality Assurance for Biomonitoring
- Agenda item 7.** Assessment of the state and trends of pollution
- 7.1. Eutrophication assessment
  - 7.2. Assessment of the state of marine coastal environment: hazardous substances in sediments and biota
  - 7.3. Assessment of pollution trends in marine biota from hot spot areas
- Agenda item 8.** The MED POL Information System
- Agenda item 9.** Specific issues
- 9.1. MYTIMED, MYTIAD and MYTIOR baseline studies
  - 9.2. Marine Pollution Indicators
  - 9.3. Data exchange with the EEA for assessments and the role of WISE-Marine in the MSFD
- Agenda item 10.** Towards a new MED POL marine monitoring strategy
- Agenda item 11.** Other Business
- Agenda item 12.** Conclusions and Recommendations
- Agenda item 13.** Closure of the Meeting



## ANNEX III

### Conclusions and Recommendations

1. The countries representatives expressed their satisfaction on the work done by the Secretariat in the framework of MED POL monitoring programme They also congratulated the Secretariat and the Experts for the three Assessment prepared on certain indicators of eutrophication, hazardous substances and trends. They expressed their wish that the Secretariat should continue working on the preparation of a Mediterranean Quality Status Report and a Report on Gaps using the data available in the MEDPOL database, as well as other relevant data sources.
2. In order to correct possible mistakes in the data up-loaded in the MED POL database, MED POL will send to the data providers and the MED POL Focal Points the relevant national data together with queries to be clarified. The cleaned and corrected data will then be sent back to MED POL to be used for the revision of the Assessment Reports, including a report on the Quality Assurance of the available data.
3. In order to proceed to the preparation the Quality of Status Report (QSR) and to develop Environmental Assessment Criteria (EAC) to enable the interpretation of contaminants concentration in sediments and biota in the Mediterranean Region, the Secretariat will form a small group of regional and national experts to develop EAC and to prepare a QSR draft to be further discussed and approved by the MED POL Focal Points in order to be presented at the COP Meeting in 2011.
4. In order to assist the countries in the implementation of their National Monitoring Programmes, the Secretariat together with IAEA Monaco Laboratory will revise the existing monitoring manuals.
5. The meeting underlined the importance of the Data Quality Assurance Programme of MED POL and recommended a more close cooperation between the Secretariat, the MED POL Focal Points and the laboratories involved in the national monitoring programmes in order to promptly identify possible methodological and analytical problems and to act accordingly with remedial measures. The meeting suggested that a list of good performing laboratories will be publicized.
6. The meeting asked the Secretariat to investigate the possibility of organizing twinning programmes between participating laboratories, or/and of organizing inter-laboratory intercalibration exercises, as a contribution to the process of improving the QA/QC in the Region.
7. The meeting asked the Secretariat to seek opportunities to enhance the capacity of the countries in data analysis and interpretation. It also suggested that the Secretariat should seek for external funds on that purpose.
8. The meeting recalled the legal obligation of the countries to implement monitoring programmes and to regularly provide relevant data to the Secretariat and urged those countries which are not doing so to comply as soon as possible.

9. The meeting expressed satisfaction for the MED POL Infosystem presented and asked the Secretariat to enter immediately into the testing phase in order to have the system operational by the first quarter of 2010. The Secretariat will transmit the Infosystem to all MED POL Focal Points, who will in turn transmit it to the relevant laboratories for detailed comments on its operability. The Data Policy Document that had been previously approved by the MED POL Focal Points will be again circulated for final comments.
10. The meeting urged the Secretariat to discuss and agree with the relevant Units of EC and EEA the most appropriate procedure for the exchange of monitoring data and to agree on harmonized reporting formats.
11. In view of the future development of a new MED POL marine monitoring strategy, the meeting underlined the importance of a better integration with the objectives and the methodologies of both the WFD and the MSFD EU Directives and the need to continue the harmonization of strategies for monitoring and assessment of the status of the marine environment. All Mediterranean countries should share the already developed methodologies for the assessment of the environmental status of coastal waters.