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International Council for the
Exploration of the Sea

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Marine Environmental
Quality Committee

REPORT OF THE SIXTH MEETING OF THE
WORKING GROUP ON MARINE POLLUTION BASELINE AND MONITORING STUDIES
IN THE NORTH ATLANTIC

18-20 February 1980, Copenhagen

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LIST OF CONTENTS

	<u>Page</u>
1. Actions taken by Council and ACMP following 5th Report of the Working Group	1
2. Considerations of International Activities of Relevance	1
2.1 Joint Monitoring Group of Oslo and Paris Commissions ..	1
2.2 GIPME and IGOSS	1
3. Consideration of the Report on Inputs to the Western Atlantic	2
4. Report on the Sediment Workshop	2
5. Report from Marine Chemistry Working Group on Intercalibration Activities	3
5.1 Heavy Metals in Biological Tissues	3
5.2 Organochlorines in Biological Tissues	3
5.3 Petroleum Hydrocarbons	3
5.4 Trace Metals in Sea Water	4
5.5 Organochlorines in Sea Water	4
5.6 Mercury and Cadmium in Sea Water - for the Joint Monitoring Group	4
6. Report from Marine Chemistry Working Group on Methods for Analysis of Low Levels of Cadmium and Lead in Biological Tissues	5
7. Report from Marine Chemistry Working Group on Sampling Methods to be Used in Assessing River Inputs	5
8. Effects of Coastal Zone Processes on the Transport and Fate of Mercury, Cadmium, and PCBs	6
9. The Use of Biological Indicators	6
9.1 Report on Use of Biological Indicators in Monitoring Studies	6
9.2 Report from Statisticians on Statistical Requirements for Trend Analyses	6
9.3 Report of Summary of Results of Regression Analysis Programme to Date	6
10. Consideration of the 1978 Coordinated Monitoring Programme..	8
11. Review of 5 Years of Data from Coordinated Monitoring Programme	8

List of Contents cont'd

	<u>Page</u>
12. Preliminary discussion of the Report of the Biological Effects Monitoring Workshop	9
13. Discussion of Links with the Working Group on Pathology and Diseases of Marine Organisms and the Relationship of Pathobiological Effects to Pollutants	10
14. Preliminary Discussion of the Impact of Pollutant Body Burdens on Marine Mammals	10
15. Any Other Business	10
16. Approval of Recommendations	11
ANNEX 1 Agenda	12
ANNEX 2 List of Participants	14
ANNEX 3 Action List	16
ANNEX 4 Recommendation	17

REPORT OF THE SIXTH MEETING
OF THE WORKING GROUP ON MARINE POLLUTION BASELINE AND MONITORING STUDIES
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18 - 20 February 1980, Copenhagen

The Chairman, Mr. A. Preston, opened the meeting at 9.15 hours on 18 February and welcomed the members. He then gave an overview of the items to be discussed and the time schedule.

1. ACTIONS TAKEN BY COUNCIL AND ACMP FOLLOWING 5th REPORT OF THE WORKING GROUP

1.1 The Environment Officer reported that the Council had accepted both of the Working Group's recommendations from the previous meeting. The recommendation that the review paper on trace metals in sea water be published was approved in C.Res. 1979/1:3 and the recommendation for the 1980 meeting of the Group was accepted in C.Res. 1979/2:23.

1.2 Concerning the ACMP meeting in October, the Environment Officer informed the Group that ACMP had reviewed the Working Group's fifth report and had expressed particular interest in the future development of the coordinated monitoring programme, including the trend monitoring aspects. The ACMP had also requested the Working Group to review the overview papers on the transport and fate of mercury, cadmium and PCBs in the marine environment and determine whether further work should be done on this subject to satisfy the JMG's requirements.

2. CONSIDERATION OF INTERNATIONAL ACTIVITIES OF RELEVANCE

2.1 Joint Monitoring Group of Oslo and Paris Commissions

2.1.1 The Environment Officer reported that the advice agreed by the Working Group the previous year on sampling and sample preparation procedures for fish and shellfish used in monitoring programmes had been given informally at the Joint Monitoring Group (JMG) meeting in Dublin in June 1979. ICES had received two additional requests from JMG - one for a report on the results of the Workshop on Monitoring the Biological Effects of Pollution in the Sea and the other for advice on the use of specimen banking in monitoring programmes.

2.1.2 Several members raised questions concerning the exact nature and scope of the Joint Monitoring Programme. This was briefly described and one of the members familiar with the programme pointed out the usefulness of ICES developing a broad-based programme on sediment monitoring.

2.2 GIPME and IGOSS

2.2.1 The Chairman and Dr. Portmann briefly described the programmes and relative roles of the IOC Working Committee on the Global Investigation of Pollution in the Marine Environment and the Working Committee on the Integrated Global Ocean Station System.

2.2.2 In this connection, some of the recent work of GESAMP (Group of Experts on the Scientific Aspects of Marine Pollution) was described, especially the work related to an assessment of the level and effects of pollution in the world's oceans being conducted by its Working Group on the Health of the Oceans.

3. CONSIDERATION OF THE REPORT ON INPUTS TO THE WESTERN ATLANTIC

- 3.1 The Environment Officer reported that, owing to the burden of other commitments and her perception that this study was considered by certain persons who had submitted data to be of questionable value, she had not further progressed in the preparation of the report on inputs to the Western Atlantic. She therefore asked the Working Group whether they still considered this to be a worthwhile project and, if so, whether certain members could assist in the critical evaluation of the information submitted.
- 3.2 In the discussion, most members of the Working Group were of the opinion that it was valuable to complete this study in order to show the available data and indicate the gaps. This could thereby act as a stimulus to the collection of additional data in terms of areas, contaminants, etc. The Group, however, felt that a critical view must be taken of the information available and this critical review could best be made by the persons who had supplied the data. Accordingly, the following members agreed to act as contact persons to obtain a critical review of the data supplied by their respective countries: Dr. Bowers (Canada), Dr. Pearce (USA) (who also agreed to supply additional data, if possible), and Dr. Johansen (Greenland). The Environment Officer will contact Dr. C. Alzieu to obtain a review of the French data. It was agreed that these critical reviews should be sent to the Environment Officer by 30 August 1980. She would then prepare an overall draft report for distribution to the full Working Group by 30 November 1980.

4. REPORT ON THE SEDIMENT WORKSHOP

- 4.1 The Chairman reminded the Working Group of the background to the Workshop on the Interchange of Pollutants in Sediments which had been held in Texel in September 1979. The issue had originally arisen as a result of a question posed by ACMP on the possibilities of using sediment studies in internationally coordinated monitoring programmes. The Chairman was of the opinion that the Workshop had not fully addressed the practical issue of how sediments can be incorporated in monitoring programmes, but had concentrated more on research activities. He asked the Working Group for guidance on what views they wished him to express when he represented the Group at a meeting of the Sediment Coordinating Group (Texel, 25 - 26 February 1980) established by the Council at the 1979 Statutory Meeting to initiate the pilot sediment study proposed by the Workshop.
- 4.2 Dr. de Barros reported that, following a discussion of the Workshop report in the Marine Chemistry Working Group, the MCWG had decided to ask the Sediment Coordinating Group to provide answers to three questions on the monitoring of pollutants in sediments. The MCWG had also been very interested in the types of intercalibration exercises which should be conducted prior to beginning a pilot sediment survey, but had felt that the Workshop proposals were not very clear on this subject.

- 4.3 In the discussion, several members of the WGMPNA also expressed concern about the intercalibration exercise proposed by the Workshop, feeling that it might be better adapted to studying metal interactions in sediments than to monitoring pollutant inputs to the sediments. Several members also mentioned the relevance of an on-going intercalibration exercise on pollutants in sediments being conducted for the Joint Monitoring Group.
- 4.4 After detailed discussion, the Working Group agreed to the following conclusions regarding the proposals made by the Sediment Workshop which should be conveyed to the Sediment Coordinating Group:
- 4.4.1 Taking into account the questions the Marine Chemistry Working Group intended to ask the Sediment Coordinating Group at its meeting on 25 - 26 February 1980, the Working Group on MPNA agreed that its Chairman should make the following points at the Coordinating Group meeting. The WGMPNA felt that insufficient attention had been given to the issue of pollution in the plans made at the Texel Sediment Workshop, especially in the shorter term aspects of the programme. Adequate attention to the pollution questions asked in 1976 needed to be incorporated into the Workshop plans, e.g., to identify, by review if necessary, the extent to which sediments can be used now in monitoring programmes and to identify the major limitations of such use. Positive recommendations for the use of sediments in monitoring programmes should be prepared.
- 4.4.2 Concerning sediment intercalibration exercises, the WGMPNA recommended that firm plans for intercalibrations be prepared by the Coordinating Group in conjunction with the Marine Chemistry Working Group. In particular, an overall plan for the series of intercalibration exercises needed for the sediment programme should be developed, with sufficient detail provided for the first stage(s) to permit discussion and approval of the exercise at the 1980 Statutory Meeting. In designing the intercalibration programme, due consideration should be given to the results of relevant work conducted by other groups, e.g., for the JMG of the Oslo and Paris Commissions.

5. REPORT FROM MARINE CHEMISTRY WORKING GROUP ON INTERCALIBRATION ACTIVITIES

5.1 Heavy Metals in Biological Tissues and

5.2 Organochlorines in Biological Tissues

Dr. M. de Barros, Chairman of the Marine Chemistry Working Group, reported that the Council had approved the conduct of an intercalibration exercise on the analysis of cadmium and lead at levels found in shellfish tissue and on PCBs in fish oil. Samples have been distributed for both exercises but additional samples are still available. She stated that the deadline for returning results to the coordinators is 1 June 1980. A summary of the results will be presented at the 1980 Statutory Meeting and the full report will be distributed by 1 October 1980 to MCWG members for their review.

5.3 Petroleum Hydrocarbons

- 5.3.1 Dr. de Barros informed the Group that samples of crude oil, mussel homogenate, and sediments had been sent out to those laboratories submitting requests. Although it had originally been anticipated that participation would have to be restricted due to a shortage of samples, it now appeared that there were enough samples to satisfy virtually all requests. There was thus no restriction on the types of equipment which should be used to analyse the samples, although participants were still requested to analyse them as completely as possible, preferably using several techniques.

5.3.2 Dr. Portmann reported that a questionnaire on sampling, sample treatment and analysis of petroleum hydrocarbons was now being prepared for wide distribution in April 1980. In addition to providing information useful in the development of further stages in the intercalibration programme, it was hoped that the results of this questionnaire could lead to the identification of a standard (or several standards) for petroleum hydrocarbon analyses.

5.4 Trace Metals in Sea Water

5.4.1 Dr. de Barros informed the Working Group that the MCWG had expanded the plans for the 5th round intercalibration exercise on trace metals in sea water on the basis of the experience gained by MCWG members who had taken part in an IOC intercalibration exercise on Bermuda in January 1980. On recommendation of the Coordinating Group for the 5th round, the MCWG had agreed that this exercise should be expanded into a Workshop in which less experienced persons could learn from the core group of highly experienced participants, who would carry out the central work of the intercalibration of sampling and sample preparation techniques. Dr. de Barros pointed out that the problem was now to obtain the necessary facilities - a land-based laboratory and at least one research vessel - to carry out the exercise.

5.4.2 Upon receiving this information, the Working Group expressed its support for the expansion in the plans for the 5th round intercalibration. The Working Group also emphasized the importance of carrying out this intercalibration as it is a prerequisite to the development of a coordinated study of trace metals in shelf waters and the coastal zone.

5.5 Organochlorines in Sea Water

5.5.1 Dr. Palmork provided information on the IOC intercalibration of sea water sampling methods for organochlorine determinations, which was also conducted on Bermuda in January 1980. The full report on the results will be available in September. Dr. Palmork also mentioned that, as another stage of the IOC intercalibration programme, the International Atomic Energy Agency Laboratory in Monaco has distributed samples of sea water spiked with organochlorine compounds to intercalibrate analytical methods.

5.5.2 Several members commented that the results of these intercalibrations might possibly be very useful to the Joint Monitoring Group, which was planning to study PCB levels in sea water.

5.6 Mercury and Cadmium in Sea Water - for the Joint Monitoring Group

5.6.1 Dr. de Barros informed the Group that the MCWG had considered the full report on the results of the intercalibration of analyses of cadmium in sea water, coordinated by Dr. Y. Thibaud. This report showed a very good distribution of results. No differences were found between the use of freezing or acidification for sample preservation, nor were different results obtained between analysing by anodic stripping voltammetry or by atomic absorption spectrometry.

5.6.2 Dr. de Barros further stated that the MCWG had considered a draft report on the results of the intercalibration of mercury analyses in sea water, coordinated by Mr. J. Olafsson. The results showed a good improvement in analytical capability since the previous exercise. No pretreatment methods, such as oxidation were included in this intercalibration, however.

6. REPORT FROM MARINE CHEMISTRY WORKING GROUP ON METHODS FOR ANALYSIS OF LOW LEVELS OF CADMIUM AND LEAD IN BIOLOGICAL TISSUES

- 6.1 This agenda item arose from the fact that few laboratories participating in the intercalibration exercises used analytical methods with detection limits low enough to determine the levels of cadmium and lead in fish muscle. The Marine Chemistry Working Group had been requested by WGMPNA to provide advice on the best methods to use for analysing low levels of cadmium and lead in biological tissues.
- 6.2 Dr. de Barros reported that the MCWG had considered this issue carefully at its meeting the previous week and had agreed that, although methods are available to analyse low concentrations of cadmium and lead in biological materials, due to the greatly increased costs associated with these methods there should be a strong justification for requiring analysis of these low levels. In terms of monitoring programmes, the MCWG recommended that other monitoring objects than fish muscle be used to determine the levels of cadmium and lead in the marine environment. For example, shellfish could be analysed for these metals without difficulty. Dr. U. Harms would elaborate a paper on the methods available for analysis of low cadmium and lead concentrations, the associated problems and costs, and when such methods should be used. This paper would be presented to the ACMP at its mid-term meeting.
- 6.3 The WGMPNA agreed with the advice of the MCWG. The Group felt that, given the low levels of cadmium and lead in fish muscle, there was no need to analyse for these metals in this tissue in a regular monitoring programme. Instead, other organs or organisms containing higher cadmium and lead levels should be used.

7. REPORT FROM MARINE CHEMISTRY WORKING GROUP ON SAMPLING METHODS TO BE USED IN ASSESSING RIVER INPUTS

- 7.1 At its previous meeting, the Working Group had considered the subject of inputs of contaminants to the marine environment via rivers and had raised the question of whether some work should be initiated to develop sampling methodologies so that a more correct picture could be obtained. It had requested the Marine Chemistry Working Group to review the international work on this subject and report back on whether ICES should take any initiative in this area.
- 7.2 Dr. de Barros reported that the MCWG had considered this request at its meeting the previous week and had agreed to carry out the work. However, there had been uncertainty as to whether the request covered only gross or also gross and net fluxes.
- 7.3 In reply, the WGMPNA stated that first of all it was important to look at gross fluxes to obtain an estimate of the distribution of substances to the ocean. After that, it would be useful to consider net fluxes. The Working Group felt that not only must proper sampling methods which give comparable results be identified, but also guidance must be provided on the appropriate ways to interpret the data so that a better understanding may be obtained of how much of the riverborne pollutants actually reach the marine environment.

8. EFFECTS OF COASTAL ZONE PROCESSES ON THE TRANSPORT AND FATE OF
MERCURY, CADMIUM, AND PCBs

- 8.1 Dr. de Barros reported that the MCWG had reviewed only the overview of mercury transport in the marine environment. It had been decided that the reaction to this overview by WGMPNA and ACMP should be obtained before further work on the PCB and cadmium overviews should be carried out.
- 8.2 Dr. Topping, one of the authors of the mercury overview paper, briefly presented the paper and explained its objectives. He stated that, rather than preparing an overview containing large amounts of data, the authors had chosen to discuss in a clear way the factors which affect the fate of mercury in the coastal zone and the open sea and to indicate the relative importance of these factors.
- 8.3 The Working Group then discussed some of the specific points made in the paper and agreed that it should be transmitted to ACMP.

9. THE USE OF BIOLOGICAL INDICATORS

9.1 Report on Use of Biological Indicators in Monitoring Studies

- 9.1.1 The Group was reminded that at the previous meeting, a small group had been set up under the coordination of Dr. Portmann to review and evaluate papers on the use of marine organisms to determine trends in the levels of contaminants in the environment. The reports suggested at that time to be reviewed were relevant papers presented to the Marine Environmental Quality Committee and papers from the International Mussel Watch Workshop.
- 9.1.2 It was noted that, although this small group had apparently not yet made much progress in its work, several reports were in preparation by other groups which would be of use in this project. One such report is a review on the use of biological indicators in various programmes in the UK. This is being prepared by the UK Marine Pollution Monitoring Group for finalization in summer 1980.
- 9.1.3 Dr. Piuze informed the Working Group about a Canadian study, particularly on the use of mussels in monitoring programmes, which would be very useful to this review. He offered to join the small group and assist in the preparation of the review.
- 9.1.4 Several other members mentioned studies relevant to this work. The Working Group then agreed that the small group, consisting of Drs. de Barros, Kerkhoff, Piuze, Topping, Uthe (and possibly Dr. V. Dethlefsen) and coordinated by Dr. Portmann, should continue its work by correspondence, especially taking into account the new papers of relevance. It should prepare a draft report for review by the small group on the first day of the Working Group meeting in 1981, and subsequent presentation to the entire Working Group later during that meeting.
- 9.2 Report from Statisticians on Statistical Requirements for Trend Analysis and
- 9.3 Report of Summary of Results of Regression Analysis Programme to Date
- 9.3.1 As Dr. Uthe, coordinator of the programme on statistical requirements for trend analysis, had been unable to attend the meeting, Dr. Bewers conveyed Dr. Uthe's views on this subject to the Working Group. Dr. Uthe had indicated that a central problem in this work was that the detailed questions the statisticians have been asked to solve are somewhat different from

laboratory to laboratory; therefore, the various statisticians have arrived at different answers. Dr. Uthe felt that the best way to progress was to arrange a meeting at which statisticians could discuss the issues and come to an agreement on the statistical methods to be used.

- 9.3.2 Dr. de Barros reported that the MCWG had considered this subject at its recent meeting and had recommended that the statisticians be brought together in a meeting, probably also with several biologists and chemists involved in this work, in order to consider how to answer three questions agreed by MCWG as basic to an agreement on statistical methods for trend monitoring. To facilitate progress, each statistician should receive a copy of these questions and of a set of raw data to analyse according to his/her usual method for later comparison at the meeting.
- 9.3.3 Dr. de Barros further reported that the MCWG felt that this work was more appropriate to the WGMPNA and thus requested the WGMPNA to take over the responsibility for coordinating the development of the trend analysis programme. She stated that the MCWG remained willing to answer questions of a chemical nature which might arise in this work.
- 9.3.4 The WGMPNA accepted this responsibility and agreed that it is an important component in its role to design and evaluate monitoring strategies in detail.
- 9.3.5 The Working Group then discussed the various issues involved in developing the appropriate statistical approach needed to properly design a programme which could determine trends in contaminant levels in the marine environment using biota. It was recalled that the original objective was to be able to detect changes in the input of contaminants by observing changes in the levels of these contaminants in organisms. However, to properly use marine organisms in this way, it was considered necessary to understand the relationship between the body burden of a contaminant and relevant physiological (e.g., sex, age, size) and other (e.g., seasonal) factors. Additionally, the relationship between the concentration of a contaminant in sea water and its concentration in an organism must be elucidated. An understanding of the basic biochemical processes involved in the uptake and accumulation of contaminants in the various organisms used in monitoring programmes is also needed.
- 9.3.6 After this overall discussion the Working Group agreed to the following statement of the issue:-

Recognising that we are making a basic assumption that the concentrations of contaminants in biota reflect the absolute level of these contaminants in the environment and therefore, inter alia, the input of these contaminants to the environment, our question is how can we screen out the influence of the various biological variables relevant to the accumulation of contaminants in biota. This presumably means identifying which variable(s) are the most significant. Having done that, perhaps with the help of biochemists and statisticians, we then want advice from the statisticians on how we should construct our samples. Also, how do we analyse them (singly, in batches or bulked) so as to show the changes in either space or time of a contaminant level and hence the input of that contaminant. We must specify what size change we wish to see and, for each contaminant, the analytical variance.

- 9.3.7 Having made this basic statement of the issues, the Working Group felt that the best progress could be made if a meeting could be arranged so that chemists, biologists and statisticians could discuss the questions and try to agree to solutions. The Working Group agreed to ask Dr. Uthe to prepare

a paper giving a clear description of the issues and posing the basic questions which need to be addressed to develop an appropriate sampling protocol. This paper should then be presented to the Marine Environmental Quality Committee at the 1980 Statutory Meeting, so that the Committee could make appropriate recommendations on the necessary steps to be taken to advance this work. Noting that there would be a special joint session on data handling issues, the Working Group felt that Dr. Uthe's paper should also be referred to that session.

- 9.3.8 The Working Group expressed its appreciation to Dr. Uthe for his work in coordinating this project.

10. CONSIDERATION OF THE 1978 COORDINATED MONITORING REPORT

10.1 The Environment Officer presented the draft report of the results of the 1978 Coordinated Monitoring Programme and gave an overview of the information included.

10.2 A number of members made suggestions for changes or additions to the draft and it was agreed that members should send any additional comments to the Environment Officer by 31 May 1980. The Environment Officer would then prepare a revised draft and distribute it to all persons who had sent in data or made comments. The final draft should be presented to ACMP at its October meeting for approval for publication in the Cooperative Research Report series.

11. REVIEW OF 5 YEARS OF DATA FROM COORDINATED MONITORING PROGRAMME

11.1 The Chairman reminded the Working Group that the ACMP, as part of its review of monitoring activities, had suggested to the WGMPNA that it prepare a review of the experience gained and results obtained in the first five years of the Coordinated Monitoring Programme. Last year the Working Group had felt that it was too early to carry out such a review, but Dr. Portmann had found it possible in early 1980 to prepare a draft review document for the Working Group's consideration.

11.2 Dr. Portmann presented his draft to the Working Group and explained the various sections. The report contained a general overview of the results obtained in the five years of the monitoring programme and provided detailed proposals for the future conduct of the programme.

11.3 A number of members made comments on the draft paper and it was agreed that all additional comments should be sent to Dr. Portmann by the end of the week following the meeting so that he could prepare a revised draft for consideration by the ACMP at its mid-term meeting.

11.4 The Working Group further agreed that, to facilitate discussion at next year's meeting, each member should prepare a short paper giving information on which pollutants are regularly monitored in which species of marine organisms and in which areas of their coastal waters. The tissue(s) or organ(s) analysed should also be indicated. This information should be sent to the Environment Officer by 15 December 1980 for compilation and distribution prior to the 1981 meeting.

11.5 Finally, the Working Group agreed that, as the design of the coordinated monitoring programme cannot be changed until 1981 at least, the existing procedures should be used in 1980. All members were reminded to submit their 1979 monitoring data to the Environment Officer with a copy to Dr. Portmann by 31 May 1980.

12. PRELIMINARY DISCUSSION OF THE REPORT OF THE BIOLOGICAL EFFECTS
MONITORING WORKSHOP

- 12.1 Dr. McIntyre, Convener of the Workshop on Monitoring the Biological Effects of Pollutants in the Sea (Beaufort, N.C., 26 February - 2 March), gave an overview of the results of the Workshop in which 60 participants had considered around 50 procedures and ultimately selected 30 - 40 as being potentially useful monitoring techniques. He then presented the highlights of each of the seven panel reports and noted that the final report will be available this summer as Rappports et Procès-Verbaux No. 179. He then asked for comments from the Working Group on the proposals made at the Workshop.
- 12.2 A number of members then either commented on when and where they felt biological effects studies could be most useful or provided information on relevant studies in their own countries. In particular, it was reported that several biological effects techniques recommended by the Workshop were presently being tested in the United States and an evaluation of their usefulness would eventually be made and given to the Working Group.
- 12.3 In general, the Working Group noted that programmes to monitor the biological effects of marine pollution are being carried out in several parts of the ICES area and substantial progress is being made; a number of promising lines are worth further investigation. However, the Working Group did not feel that these techniques were sufficiently well developed to recommend their deployment in internationally coordinated monitoring programmes. A basic problem was to select an appropriate balance between the ecological relevance of a particular approach and the specificity of the effects measured in terms of the pollutant(s) causing these effects. In general, it was felt that the higher the certainty with which the observed effect can be attributed to pollution, the less certain is its interpretation in environmental terms. The Working Group, therefore, was of the opinion that the initial deployment and testing of the techniques selected should be on the basis of a careful evaluation of their relevance to the pollution situation in which they are to be used. This testing should be properly supported by a thorough examination of the chemical and physical factors which may influence the observed effect.
- 12.4 Although the Working Group felt unable to recommend a coordinated approach at this stage, it did feel that ICES should encourage the deployment of biological effects studies at the national level and the reporting of the results of such studies to ICES. In general, the Working Group favored the selection of techniques from such areas as pathobiology, bioassay (especially in the field) and physiology as they appear to offer the best balance between ecological relevance and pollution specificity.
- 12.5 The Working Group further recommended that a small sub-group of its members be given the responsibility of evaluating the results of these pilot studies with a view to the eventual selection of suitable packages of techniques that may be recommended for use in particular categories of pollution situations. To begin this work, all members were asked to prepare a short paper on which biological effects monitoring techniques are presently being tested or used in their countries, the types of situations in which they are used, and, if possible, an evaluation of the utility of these techniques in relation to the information desired. These papers should be sent to the Environment Officer by 15 December 1980 for compilation and distribution.

13. DISCUSSION OF LINKS WITH THE WORKING GROUP ON PATHOLOGY AND DISEASES OF MARINE ORGANISMS AND THE RELATIONSHIP OF PATHOBIOLOGICAL EFFECTS TO POLLUTANTS

- 13.1 In considering this item, the Working Group discussed the results obtained so far from C.Res.1977/4:11, in which ICES member countries were encouraged to collect information on the occurrence and incidence of tumors, skeletal anomalies, fin rot, etc., in fish and invertebrates. There was a general feeling that the information obtained to date by many of the national programmes initiated on the basis of this resolution was too general to be able to clearly relate disease incidence to high pollution levels. It was suggested that special studies be conducted in areas known to be polluted and that more detailed information be obtained on, for example, the type of tumors found, the actual incidence of the tumor or disease in the population, and the causative agent of the tumor or disease. To provide more complete information, it was further suggested that analyses be conducted of the concentrations of contaminants in the affected organisms and possibly also that a water quality survey be conducted in the area.
- 13.2 The Working Group wished to convey these suggestions to the Working Group on Pathology and Diseases of Marine Organisms for consideration at its next meeting and to assure that Group of the interest of the WGMPNA in this matter.

14. PRELIMINARY DISCUSSION OF THE IMPACT OF POLLUTANT BODY BURDENS ON MARINE MAMMALS

- 14.1 It was noted that there have been a number of papers presented at recent Statutory Meetings on the levels of contaminants, especially organochlorine residues, in marine mammals. At the Joint Session of the Marine Environmental Quality Committee and the Marine Mammals Committee held at the 1979 Statutory Meeting, papers on the high levels of organochlorine residues in seals from certain areas in the North Atlantic were presented. The discussion focussed on the mechanism of the effect of these substances on seals and revealed a considerable difference of opinion among scientists. Because of the serious effects indicated by these papers, the Council strongly encouraged ICES member countries to carry out further studies on the levels of contaminants in marine mammals and their effects (C.Res.1979/4:19).
- 14.2 With this background, a number of Working Group members reported on the results of studies which were being carried out in their countries. A problem common to most of these studies was that the animals analysed were already dead and it was difficult to determine the cause of death and the possible contribution of high contaminant levels to the death of the animal.
- 14.3 In conclusion, the Working Group affirmed its interest in this subject and felt that it could be useful to consider the possibility of using marine mammals in pollution monitoring programmes.

15. ANY OTHER BUSINESS

There was no other business for discussion.

16. APPROVAL OF RECOMMENDATIONS

- 16.1 The Working Group recommended that the next meeting be held for four days the week after the meeting of the Marine Chemistry Working Group in February 1981. It was agreed that the first day of the meeting should be reserved for the business of the sub-groups (see Rec. 1).
- 16.2 The Chairman then thanked all the members for their assistance at this portion of the meeting. The WGMPNA then met with the ICES/SCOR Working Group on the Study of the Pollution of the Baltic for a joint session on matters of common interest. The results of the joint session are reported separately as Doc. C.M.1980/E:6.

ANNEX 1

WORKING GROUP ON MARINE POLLUTION BASELINE AND MONITORING STUDIES IN THE
NORTH ATLANTIC

18 - 20 February 1980, 9.00 hours, ICES Headquarters
Palægade 2, Copenhagen

AGENDA

1. Actions taken by Council and ACMP following 5th report of Working Group.
2. Consideration of international activities of relevance
 - i) Joint Monitoring Group of Oslo and Paris Commissions
 - ii) GIPME and IGOSS
3. Consideration of the report on inputs to the Western Atlantic
4. Report on the Sediment Workshop
5. Report from Marine Chemistry Working Group on intercalibration activities
 - i) Heavy metals in biological tissues
 - ii) Organochlorines in biological tissues
 - iii) Petroleum hydrocarbons
 - iv) Trace metals in sea water
 - v) Organochlorines in sea water
 - vi) Mercury and cadmium in sea water - for the Joint Monitoring Group
6. Report from Marine Chemistry Working Group on methods for analysis of low levels of cadmium and lead in biological tissues
7. Report from Marine Chemistry Working Group on sampling methods to be used in assessing river inputs
8. Effects of coastal zone processes on the transport and fate of mercury, cadmium and PCBs
9. The use of biological indicators
 - i) Report on use of biological indicators in monitoring studies
 - ii) Report from statisticians on statistical requirements for trend analysis
 - iii) Report of summary of results of regression analysis programme to date
10. Consideration of the 1978 Coordinated Monitoring Report
11. Review of 5 years of data from Coordinated Monitoring Programme

12. Preliminary discussion of the report of the Biological Effects Monitoring Workshop
13. Discussion of links with the Working Group on Pathology and Diseases of Marine Organisms and the relationship of pathobiological effects to pollutants
14. Preliminary discussion of the impact of pollutant body burdens on marine mammals
15. Any other business
16. Approval of recommendations

ANNEX 2

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ANNEX 3

ACTION LIST

1. Drs. Bewers, Johansen, Pearce (and Alzieu) to act as contact persons in the critical evaluation of their respective data on the input of pollutants to the North Atlantic. Such critical reviews should be sent to the Environment Officer by 30 August 1980. She will then prepare overall document for distribution to full Working Group by 30 November 1980 (see para 3.2).
 2. Drs. de Barros, Kerkhoff, Piuze, Topping, Uthe (and possibly Dr V Dethlefsen), with Dr Portmann as Coordinator, to review relevant papers and prepare a report evaluating the use of marine organisms as biological indicators in pollution monitoring programmes. The draft paper should be ready for the 1981 meeting of the Working Group (see Sec.9.1).
 3. Dr Uthe is requested to prepare a paper for C.M.1980 providing a clear description of the issues involved in developing a programme of trend monitoring using marine organisms and the questions which must be addressed to develop an appropriate sampling protocol. This paper should be presented to the Marine Environmental Quality Committee for it to prepare appropriate recommendations on how to advance this work (see para. 9.3.7).
 4. All members with comments on the draft report of the results of the 1978 coordinated monitoring programme should send them to the Environment Officer by 31 May 1980. The Environment Officer should prepare a revised draft for circulation to contributors and reviewers and presentation to the ACMP at its October meeting. (See para 10.2).
 5. All members to prepare a short paper on which pollutants are regularly monitored in which marine organisms (including tissues and organs analysed) from which areas of their coastal waters. This information should be sent by 15 December 1980 to the Environment Officer, who will compile it for distribution to the members (see para. 11.4).
 6. All members to submit data for the 1979 coordinated monitoring report to the Environment Officer with a copy to Dr Portmann by 31 May 1980 (see para. 11.5).
 7. All members to prepare a short paper on which biological effects monitoring techniques are being used in their countries, the situations in which they are used, and their usefulness. The papers should be sent to the Environment Officer by 15 December 1980 for compilation and distribution (see para. 12.5).
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ANNEX 4

Recommendation 1

It is recommended that the next meeting of the Working Group on Marine Pollution Baseline and Monitoring Studies in the North Atlantic be held for four days in February, 1981, following the meeting of the Marine Chemistry Working Group. Major items to be considered are:

- a) progress in the development of the trend monitoring programme,
 - b) the use of biological indicators in monitoring studies, and
 - c) results of on-going monitoring programmes (1979 coordinated monitoring, national biological effects monitoring, etc.).
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