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Exploration of the Sea

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Marine Environmental
Quality Committee

REPORT OF THE FIRST JOINT SESSION OF THE

WORKING GROUP ON MARINE POLLUTION BASELINE AND MONITORING STUDIES

IN THE NORTH ATLANTIC

AND THE

ICES/SCOR WORKING GROUP ON THE STUDY OF POLLUTION IN THE BALTIC

20 February 1980, Copenhagen

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1. OPENING OF THE MEETING AND ADOPTION OF AGENDA

The meeting was opened at 11.30 hours on 20 February by the Co-Chairmen, Mr. A. Preston, Chairman of the Working Group on Marine Pollution Baseline and Monitoring Studies in the North Atlantic, and Prof. G. Kullenberg, Chairman of the ICES/SCOR Working Group on the Study of Pollution of the Baltic. The draft agenda was introduced and adopted. The ICES Environment Officer acted as Rapporteur.

2. OVERVIEW OF MAJOR ACTIVITIES OF THE TWO WORKING GROUPS

2.1 Mr. Preston gave an overview of the areas of major interest of the Working Group on Marine Pollution Baseline and Monitoring Studies in the North Atlantic (WG MPNA), comprising (1) the coordinated monitoring programme of contaminant levels in marine organisms, (2) trend monitoring using biological indicators, (3) monitoring the biological effects of pollution, and (4) the role of sediments in the cycling of pollutants and the monitoring of sediments in a pollution context.

2.2 Prof. Kullenberg then reviewed the activities of the ICES/SCOR Working Group on the Study of the Pollution of the Baltic, including (1) the Baltic Open Sea Experiment (BOSEX), (2) coastal zone dynamics and their relationship with processes in the open sea, (3) patchiness and heterogeneity in the field conditions, and (4) inputs to and mass balances of nutrients and heavy metals in the Baltic Sea. Prof. Kullenberg expressed the interest of the ICES/SCOR Working Group in having an exchange of ideas and possibly coordinating some work with the WG MPNA.

2.3 These presentations triggered a discussion of the subjects of pollutant input information and the development of mass balances. Atmospheric deposition was considered to be an important route for the input of substances to the sea, but it has been impossible to estimate the exact contribution due to the lack of adequate methodology. Mass balances were felt to give useful information even though they were only rough estimates. In this connection, it was noted that the contribution to the nitrogen content in sea water by blooms of blue-green algae can be considerable; in the central part of the Baltic Sea, blue-green algae contribute around 100 000 tonnes N per year to the ecosystem.

2.4 It was reported that large plankton blooms related to eutrophication have been occurring off the east coast of the United States. A greater frequency of algal blooms have also been observed off the coast of the United Kingdom, however, it is not yet clear whether these are related to pollution or to other factors, such as changes in hydrographic conditions. It was noted that the factors triggering blooms of blue-green algae are very complex.

2.5 In concluding this discussion, the participants agreed that the development of mass balances can be useful in considering pollution problems, but a good understanding of the system is needed to be effective.

3. BIOLOGICAL EFFECTS MONITORING

3.1 In opening the discussion on this topic, Mr. Preston pointed out some of the problems associated with monitoring the biological effects of marine pollution. Among these are that it is often difficult to relate a given effect to a particular pollutant. Additionally, one must avoid choosing both very specific effects which have very little relevance to the overall environment and effects which are so general that one cannot determine the stimulus. Proper interpretation of biological effects studies requires that other studies are also conducted to permit a better understanding of the whole system in which the tests are carried out.

3.2 Dr. McIntyre, Convenor of the Workshop on Monitoring the Biological Effects of Pollution in the Sea (Beaufort, N.C., 26 February - 2 March, 1979), provided additional information on the progress in the ICES work to develop appropriate effects monitoring techniques. Several participants then provided information on the results of their studies.

3.3 In the discussion on this subject, it was stressed that when monitoring biological effects, a suite of techniques must be used as no one technique is adequate. Similarly, biological effects monitoring cannot stand alone, but must be accompanied by the monitoring of other parameters. An integrated approach is needed in an attempt to identify which substances are affecting which organisms and to try to relate the biological effects observed with the levels of contaminants in the environment. Ultimately, we would like to know the mechanisms of action from the input of a contaminant to its level observed in the environment, its level observed in organisms and finally its effect on the organisms.

3.4 It was suggested that an outline package could be prepared which could serve as a model for each country in the development of its own specific effects monitoring programme. This could be presented at the 1980 Statutory Meeting for discussion and criticism.

3.5 In concluding the discussion on this topic, it was agreed that the choices of the approaches taken in biological effects monitoring should be made on the basis of the individual situations. Eventually more general approaches could be developed based on the results of the experience gained. The two Working Groups agreed that they should maintain communication on their activities in this area and schedule another joint session when there are some results available.

4. EXCHANGE BETWEEN COASTAL WATERS AND OFFSHORE AREAS

4.1 Dr. Brosin opened the discussion on this topic by bringing up two important questions concerning the physical processes affecting the exchange between nearshore and offshore areas: (1) are there any special types of circulation along the shore, and (2) does vertical mixing along the coast occur? He mentioned some means of studying these issues, based particularly on research in the Baltic Sea. He also pointed out that another kind of circulation can occur due to a pattern of distortions in sea level which can develop at a certain distance from the coast.

4.2 In the discussion, it was mentioned that sedimentary processes in the nearshore zone have a great influence on the transport of certain heavy metals. In accumulation areas, the sediments serve as a good record of what has happened

in the environment, e.g., storms. To best understand the geochronology of a sediment, it was stated that areas of study should be chosen which are not greatly disturbed by physical or biological processes.

5. CLOSING OF THE MEETING

5.1 In closing the meeting, the Co-Chairmen each expressed his pleasure at the useful discussion of topics of mutual interest which had taken place in the joint meeting. The participants also agreed that the meeting had provided an excellent opportunity for an exchange of ideas and research results. Even though no joint projects had been initiated, the members of both Working Groups agreed that joint meetings should be held from time to time to inform each other of their work and to discuss projects and problems of common interest.

5.2 The Co-Chairmen adjourned the meeting at 17.30 hours.

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