Intergovernmental Oceanographic Commission
Workshop report no. 15

Report of the CPPS/FAO/IOC/UNEP International Workshop on Marine Pollution in the Southeast Pacific

Santiago de Chile, 6-10 November 1978

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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

Workshop report No. 15

The International Workshop on Marine Pollution in the Southeast Pacific

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SUMMARY REPORT

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No.	Title	Publishing Body	Language(s)
1	CCOP-IOC, 1974, Metallogenesis, Hydrocarbons and tectonic Patterns in East Asia (Report of the IDOE Workshop on); Bangkok, Thailand, 24-29 September 1973, UNDP (CCOP), 158 pp.	Office of the Project Manager UNDP/CCOP c/o ESCAP Sala Santitham Bangkok, Thailand	English
2	CICAR Ichthyplankton Workshop Mexico City, 16-17 July 1974, (Unesco Technical Paper in Marine Science, No. 20).	Division of Marine Sciences, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
3	Report of the IOC/CFCM/ICSEM International Workshop on Marine Pollution in the Mediterranean, Monte Carlo, 9-14 September 1974.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Spanish
4	Report of the Workshop on the Phenomenon known as "El Niño", Guayaquil, Ecuador, 4-12 December 1974	FAO Via delle Terme di Caracalla 00100 Rome, Italy	English Spanish
5	IDOE International Workshop on Marine Geology and Geophysics of the Caribbean Region and its Resources, Kingston, Jamaica, 17-22 February 1975.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
6	Report of the CCOP/SOPAC-IOC IDOE International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific, Suva, Fiji, 1-6 September 1975.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English
7	Report of the Scientific Workshop to initiate planning for a co-operative investigation in the North and Central Western Indian Ocean, organized within the IDOE under the sponsorship of IOC/FAO (IOFC)/Unesco/EAC, Nairobi, Kenya, 25 March - 2 April 1976.	IOC, Unesco Place de Fontenoy 75700 Paris, France	Full text English only Extract and Recommendations: French Spanish Russian

No.	Title	Publishing Body	Language(s)
8	Joint IOC/FAO(IPFC)/UNEP International Workshop on Marine Pollution in East Asian Waters, Penang, 7-13 April 1976.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English
9	IOC/CMG/SCOR Second International Workshop on Marine Geoscience, Mauritius, 9-13 August 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Spanish Russian
10	IOC/WMO Second Workshop on Marine Pollution (Petroleum) Monitoring, Monaco, 14-18 June 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Spanish Russian
11	Report of the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and adjacent regions, Port-of-Spain, Trinidad, 13-17 December 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
11 Suppl.	Collected contributions of invited lecturers and authors to the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and adjacent regions, Port-of-Spain, Trinidad, 13-17 December 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
12	Report of the IOCARIBE Interdisciplinary Workshop on Scientific Programmes in support of Fisheries Projects, Fort-de France, Martinique, 28 November-2 December 1977.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
13	Report of the IOCARIBE Workshop on Environmental Geology of the Caribbean Coastal Area, 16-18 January 1978.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
14	IOC/FAO/WHO/UNEP International Workshop on Marine Pollution in the Gulf of Guinea and adjacent areas, Abidjan, Ivory Coast, 2-9 May 1978.	UNEP Palais des Nations CH-1211 Geneva Switzerland	English French

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THE INTERNATIONAL WORKSHOP ON MARINE POLLUTION IN THE SOUTHEAST PACIFIC

Workshop report No. 15

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1. OPENING OF THE WORKSHOP

The International Workshop on Marine Pollution in the Southeast Pacific was held in Santiago, Chile, from 6 to 10 November at the kind invitation of the Government of Chile and under the auspices of the Permanent Commission for the South Pacific, the Intergovernmental Oceanographic Commission, the United Nations Food and Agriculture Organization and the United Nations Environment Programme. The Workshop was opened by the Chairman, Rear-Admiral Guillermo Aldoney H., who stressed the importance attached by participants to the meeting, as their presence testified.

The participants were then addressed by Mr. Carlos Bustos, Chairman of the Chilean National Committee for PCSP, who referred to the nature of the problem of pollution and described the measures being taken by countries to prevent it. He emphasized the need for regional action and referred to the usefulness in that respect of support from international organizations.

A communication from Dr. S. Keckes, Director of the Regional Seas Programme Activity Centre of UNEP, who was unfortunately unable to attend the Workshop, was then read out. On behalf of Dr. M. Tolba, Executive Director of UNEP, and in his own personal capacity, he wished the Workshop every success, stating that:

"The Southeast Pacific Region has been recognized by the Governing Council of UNEP as one of the areas in which this organization, as a focal point for environmental activity and coordination within the United Nations system (United Nations General Assembly resolution 2994 (XXVII), should act as a catalyst by assisting Member States of the region in developing and carrying out a plan of action for the preservation and enhancement of the marine environment and of the coastal areas of the region.

In co-sponsoring this Workshop, the wish of UNEP is that the discussions should result in a plan of action for the benefit of the region.

UNEP is ready to co-operate in preparing and implementing the plan along the same lines as activities in the Mediterranean, the Red Sea, the Kuwait Action Plan Region, West Africa, the Caribbean, Southeast Asia and the Southeast Pacific."

Ambassador Juan Miguel Bakula, Secretary-General of PCSP, referred to the background of the meeting and to the preparatory work the Commission had been doing. He spoke of the limited ability of the countries of the region to tackle the problem, and the consequent need to draw up a plan of action which would be carried out in stages. In conclusion, he mentioned the need for the public to be made aware of the activities being undertaken since its participation was essential to success in programmes for the prevention and control of pollution.

The agenda for the Workshop and the list of participants are attached as annexes to this report.

Dr. Slaczka, representing IOC, referred to the usefulness of the International Workshops in helping to provide the basis for implementation of the Comprehensive Plan for the Global Investigation of Pollution in the Marine Environment of the Comprehensive Plan and stated its main components, namely:

- planning and carrying out of basic systematic observations on the concentration of specific pollutants in the marine environment including organisms, sea water and sediments;

- identification of the main sources of pollution, including rates of input via the various pathways, with identification of sinks and determination of removal rates. This will lead to mass balance estimates;

- establishment of basic exposure standards for man or environmental components, providing an essential part of the basis for marine pollution control.

He described other activities carried out by IOC which might be of assistance for the Plan for the Southeast Pacific region, particularly intercalibration. In conclusion, he referred to specialized bibliographical material which could be sent to participants on request.

2. GENERAL ASPECTS

Under item 1 of the agenda, six papers were submitted by specialists invited by the organizers:

2.1 Mr. Oscar Guillén introduced his paper on abiotic marine conditions in the Southeast Pacific, referring to the physical and chemical parameters and their variations in the area between Panama and Southern Chile. On the basis of the distinction made by Wyrtki (1967) concerning area surface and subsurface water masses, he provided the following data: tropical surface water, marked by its high temperature (over 25° C) and low salinity (under 34 o/oo) occurring north of 4° S; subtropical surface water, with high salinity (over 35 o/oo) and temperatures ranging between 28° and 15° C, occurring between latitudes 12° and 25° S. Between those two masses, equatorial surface water with salinity below 34.8 o/oo is to be found (Zuta and Guillén, 1970).

Convergence of the cold water of the Peruvian current from the south and the warm tropical water in the north gives rise to the so-called Equatorial Front, situated between 0° and 5° S and extending from close to the continent to the Galapagos Islands.

Sub-Antarctic temperate water originates in the vicinity of 50° S, branching out southward and northward as part of the Peruvian and Chilean system of currents. He then explained that subtropical subsurface water and that of the minimum oxygen layer was the only water formed in the region.

He also described the surface and subsurface circulation system in the area: the processes of upwelling, marked by low temperature, low dissolved-oxygen content and high nutrient content; the characteristics of the "El Niño" phenomenon occurring in the area at irregular intervals (5 to 16 years).

In conclusion, he commented on the values for dissolved oxygen and nutrients (phosphates, silicates and nitrates) obtaining in the area.

2.2 The paper on biotic characteristics of the Southeast Pacific, with special reference to the Chilean sector, was introduced by its author, Dr. J.C. Castilla, it provided a brief survey of the composition of the biota, the environment and interrelations in the region, concentrating on the temperate region of the South Pacific (Gulf of Guayaquil, Southern Chile); it was based on biogeographical studies of marine fauna and flora and the fragmentary knowledge that existed of the ecosystems of the region.

In defining and describing the ecosystem concept, he referred to the problems involved in systematization, suggesting an alternative procedure of taking major or global generalizations and narrowing down the divisions as further evidence was gathered.

He referred to the complexity of the marine biota of the region, with its specific tropical, subtropical, temperate and sub-Antarctic components, emphasizing the importance of recognizing the species peculiar to the region (endemic species) and the influence of physical, chemical and climatic oceanographic factors on the character of the biota. He also spoke of the need to carry out problem-focused studies of ecosystems, particularly in coastal sectors, in order to understand the difficulties caused by human activity, in view of the fact that the necessary knowledge could not be transferred from other regions - although it would be easy to acquire a specific technological package (e.g. fisheries, pollution control), it would be impossible to obtain information on their own ecosystems and inherent dynamics.

In the ensuing discussion, reference was made to the importance of baseline studies for establishing estimates of the effects of pollutants and monitoring activities.

A further point made was the need for governments in the region to determine protected areas for the purpose of preserving them from pollution hazards.

2.3 Dr. R. Jordan introduced his paper on fishing resources and the marine environment, referring to inter alia, the general features of the environment and their relationship with the resources of the region. He commented on the main resources exploited by the countries participating in the Workshop, from the point of view of the biogeographical distribution of species in the provinces: Panamanian (Lower California - Northern Peru); Peruvian and Chilean (06° S - 42° S approximately); Patagonian (south of 42° S) and Oceanic; and also the pelagic and demersal occurrence of the resources.

Referring to the importance of existing fisheries, he gave figures for the catches of each country in the subregion, which had reached figures as high as 13.9 million tonnes (1970), accounting for some 20 per cent of the world catch, though the present level was around 10 per cent as a result of smaller anchovy catches. He also presented various estimates regarding the potential of certain resources of the region. Several statistical tables contained country-by-country information on apparent per capita consumption and demand, catches per species, etc., the conclusion being that the scale of present and potential exploitation, regardless of other considerations, was justification enough for serious concern about the possible harmful effects of pollution on living resources and on fisheries.

2.4 Dr. Amaral e Silva introduced his paper on pollution of sea water by domestic and industrial wastes, referring initially to the development of research and action for the protection of human health carried out by the Pan-American Health Organization/ World Health Organization (PAHO/WHO).

He referred in his statement to the assimilation of pollutants by the sea, the most important characteristics of domestic effluent in the aquatic environment and its impact, particularly when discharged in estuaries or near beaches. He also mentioned the potential hazards for human health arising from the presence of pathogenic agents (bacteria, viruses, parasites, etc.).

He spoke of the use of indicators of sea-water quality in relation to the presence of pollutants, stating that reliable data indicated that faecal coliforms would not persist in water where BOD was below 30 mg/1; that in estuary water with around 200 faecal coliforms per 100 ml, the presence of Salmonella ranged from 6.5 to 31 per cent of that total; and that when coliform density was in the neighbourhood of 1,000 organisms per 100 ml, there would be at least twice as many Salmonella as in the first case. He also mentioned the use of mussels as indicators.

Other matters covered were methods of monitoring marine pollution by domestic sewage in regard to its unhygienic and unaesthetic effects and its impact on marine flora and fauna. He stated that devices such as diffusers helped to reduce the impact of the emission source, ensured the dispersal of pollutants and prevented the formation of stable areas of waste water. In that connection,he presented a table showing the typical efficiency of methods of treating waste water.

With regard to industrial effluent, he referred to that of the west coast of South America, explaining, for instance, that the discharges of fish wastes and stick water from the fish-meal factories in Peru were estimated in 1969 to be the equivalent of the sewage discharge of a city of about thirty million inhabitants; with the introduction of re-use and treatment systems, some 90 per cent of the pollution load, in terms of BOD, had been eliminated.

2.5 Dr. J. Wonham introduced his paper on marine pollution by petroleum and petroleum derivatives, commenting on the problems of chronic oil pollution caused by the effluent of refineries and other petrochemical plant, which was frequently considered to be potentially more harmful, in the long run, than a large accidental spill, where in many cases cleaning and rehabilitation could be completed in a few years. This generalization did not apply to sea-birds, however, since they were thought to suffer a significant drop in numbers in the latter case.

He presented some statistics on accidental oil spills and commented on the growth of oil tanker fleets, in number and in load capacity, and on various existing estimates of the total annual input of hydrocarbons into ecosystems (2 to 20 million tonnes).

He then looked at the main aspects of international conventions relating to operational discharges and to those resulting from tanker accidents, before going on to methods of combating oil spills and the criteria that should be applied in selecting the equipment for dealing with them.

He then gave an account of IMCO programmes of assistance to developing countries in adopting and implementing conventions relating to the marine environment, observing that their effectiveness would depend on truly universal application.

He referred to the findings of the International Conference on Tanker Safety and Pollution Prevention (February 1978, document CM.PSE/9 Add.1), and in particular to the dates laid down for the technical provisions of the SOLAS and MARPOL protocols.

During discussions, comments were made on possible gas production installations and the attendant pollution hazards, and it was stated that the greatest dangers might be in connection with gas pipeline failures and the transport of liquid gas.

In conclusion, he mentioned IMCO's readiness to co-operate in training and other matters within its field of competence, together with the possibility of concluding co-operative agreements with PCSP.

2.6 Dr. E. Mandelli introduced his paper on heavy metal pollution, pointing out that the term also covered non-metallic amphoteric elements. He explained that some of them (Cu,Zn) operated, at very low concentrations, as catalysts in living systems. Elements such as silver, cadmium and mercury were foreign to such systems and were dangerous for organisms,constituting a serious hazard to human health. Natural inputs of lead had been increased by those resulting from human activities; and that addition to ecosystems was a matter of grave concern since lead could effect organisms both somatically and genetically. The chemical speciation of heavy metals in the aquatic environment was, he observed, hard to establish.

Weathering processes and volcanic activity were the chief factors in the transfer of heavy metals to the oceans, in addition to which were "man-made" sources associated with processes of erosion through intensive land use and with domestic and industrial wastes.

He stated that the movement of material from terrestrial sources towards oceans(by means of rivers, glaciers and winds) had increased from 9.3×10^9 tonnes p.a. to 24×10^9 tonnes p.a. and there was considered to be a proportional increase in the transport of heavy metals.

He noted five ways in which metallic oligo-elements were transported by rivers: (i) in dissolution; (ii) adsorbed to inorganic solids; (iii) as metallic coatings on solids; (iv) in organic solids; and (v) in crystalline materials of detrital origin.

With regard to the atmospheric transport of materials, chiefly as aerosols, he pointed to the existence of two main natural sources: marine salts and continental dusts; and natural high-temperature processes (volcanic activity) and human activities (combustion of coal and petroleum, production of cement, etc.).

He then referred to domestic and industrial wastes passing through coastal outfalls and containing appreciable concentrations of heavy metals, and to other deliberate discharging of land-based materials and waste on the continental shelf (dredging materials, sludge, waste from chemical plant, etc.).

Referring to the ultimate destination of heavy metals introduced into the marine environment, he commented on the variety of the transformations involved, which included physical, chemical and biological processes (formation of complexes, biological transformations, bio-accumulations, sedimentation, etc.).

The possible effects of toxic pollutants could be regarded as: (a) primary effects (lethal in the short term and sublethal in the long term); and (b) secondary effects (deterioration of habitat and of food chains; development of predators, competitors and diseases; and destruction of food sources.

The repercussion on fisheries was of an economic character and might involve loss of fishery resources, smaller catches and consequent marketing losses.

With regard to the monitoring of pollution in the aquatic environment, he stressed the importance of: (i) estimating the concentration of pollutants on the basis of their input rates; (ii) estimating concentration factors in organisms and sediments, and (iii) estimating the concentration of pollutants in "critical" materials, which is only possible when the two previous aspects were known.

In conclusion, he referred to the need for baseline studies as a starting point for monitoring programmes, which were regarded as essential in determining the rates of input and the distribution of pollutants.

3. MARINE POLLUTION IN THE REGION

Specialists from the region presented papers on the marine pollution situation in their respective countries. The following general aspects were highlighted.

3.1 Domestic and industrial wastes

There was a general problem in that domestic and industrial waste, without previous treatment and in some cases with inadequate treatment, was discharged direct on the seashore or indirectly via watercourses. In a very few cases were outfalls used. This situation applied to the major cities in the subregion (Panama City, Quito, Guayaquil, Lima-Callao, Viña del Mar-Valparaiso, Santiago, Concepción).

Areas with special problems were identified, such as those affected by discharge of wastes from fishing industries (Manta, Ecuador; Bahiás de Chimbote, Tambo de Mora and Supe, Peru); and by discharges of ore washings, mainly from copper mining (Bahiá Ite, Peru; Bahiá Taltal and Chañaral, Chile).

A number of existing problems were pinpointed in that connection: (i) inadequate (and sometimes non-existent) knowledge of the volume and characteristics of domestic and industrial discharges; (ii) limited knowledge of the transport processes, final destination, and effects of pollutants; (iii) need for baseline studies as reference points for determining any increase in pollutant input and persistence in ecosystems, and for activities concerned with assessing damage and monitoring pollution; (iv) risks of serious pollution damage to ecosystems in estuarine areas, particularly in the case of fragile and complex ecosystems, such as those of mangrove swamps, and large-scale fishery resources in inshore areas (shrimps in Panama and Ecuador).

3.2 Pesticides

Data were presented on the consumption of insecticides, fungicides and herbicides in the region. Little was known, however, of the extent of pollution by pesticides.

3.3 Petroleum pollution

Participants spoke at some length on various instances of accidental oil spills in their countries, particularly in Chile and Ecuador, describing the methods of treatment adopted and the consequences observed.

Emphasis was placed on the need for studies in areas liable to be affected by chronic oil pollution (oil terminals, refineries, ports, drilling operations on the continental shelf, natural sea pitch, etc.).

3.4 Institutions, methods and facilities

It was recognized that in the region there were university centres, marine research institutions, laboratories in the health sector and other such establishments carrying out programmes concerning marine pollution, at different operational levels and for different purposes. These centres are identified in the papers referring to Ecuador, Peru and Chile.

It was stated that facilities were available in the region for carrying out research programmes concerned with the basic problems noted. It was pointed out, however, that special requirements might arise depending on progress in specific research programmes.

With regard to applicable methods (sampling techniques, analysis, interpretation of findings, etc.), including intercalibration, with a view to co-ordinated regional activity, it was agreed that all aspects of the matter should be considered; there was, in addition, the possibility of international assistance. In that connection, mention was made of the potential of the IOC-Voluntary Assistance Programme.

3.5 Specialist personnel

The problems of lack of technical and scientific personnel in this field showed marked variations in the countries of the region. In some cases, there were specialists, including teams of researchers, to carry out studies on marine pollution, and their training requirements for dealing with isolated problems might be inconsiderable. In other cases, training and proficiency requirements (including master's and doctoral degree levels) were critical aspects which called for a solution before a start could be made on such programmes.

3.6 Technical and economic support

It was recognized on several occasions that technical support was needed in the region, as was a larger economic contribution (from national and international sources) for research in that field.

4. POLICIES AND LEGISLATION RELATED TO MARINE POLLUTION

Various legal experts and specialists from the region gave details, in their contributions, of domestic legislation in their respective countries.

The following general aspects were highlighted:

4.1 Domestic legislation

Most countries in the region had enacted legislation on marine pollution which, though incomplete and fragmentary, laid down standards for countering and containing pollution. However, for want of resources and adequate decision-making, the legislation was not applied as strictly as it should have been. In some countries of the region, there was no specific legislation for preventing or combating marine pollution. It was nevertheless stated that consideration was being given to the matter of filling that legal gap.

Emphasis was also placed on the need for countries to lay down standards, especially of a preventive character, regarding marine pollution from terrestrial sources, particularly in areas where such legislation was lacking.

For the reasons given, the time was obviously ripe to attempt to bring laws into line with one another and to put into effect a Regional Convention for protection of the Southeast Pacific against marine pollution. If legislation to prevent marine pollution was not harmonized, there would be a degree of distortion in the attainment of the aims and purposes of such a convention.

4.2 International legislation

In a world-wide context, the countries of the region, though they had specific national policies, had maintained a similar position at the United Nations Conference on the Law of the Sea in view of their very similar geographical context and features.

Furthermore, although several countries had not ratified the IMCO conventions on marine pollution, they had expressly or tacitly embodied their principles in their relevant legal or administrative provisions. It should also be pointed out in this connection, however, that those principles or procedures, designed to prevent or reduce the adverse effects of marine pollution, were inadequately applied.

Of the countries that went to make up the region, three formed part of the Permanent Commission for the South Pacific, a body which had for over a quarter of a century possessed an institutional legal system and was therefore suitably equipped to co-ordinate the draft Regional Convention on protection of the Southeast Pacific against marine pollution and other plans which might come into being.

5. TENTATIVE REGIONAL PLAN

Under item 4 of the agenda, Mr. Oscar Guillén of the Peruvian Instituto del Mar introduced the working paper on marine pollution in the Southeast Pacific, with a view to establishing a plan of action on research into marine pollution in the region.

Dr. Slaczka provided information about various possibilities of support for the programmes planned by the working group. He referred, in particular, to the IOC Voluntary Assistance Programme and to the programme for Training, Education and Mutual Assistance in the marine sciences in respect of some of the activities suggested in the proposal by Mr. Guillén. He said that a realistic plan for phased action was required and emphasized the need to overcome problems concerning manpower training and the intercalibration of methods.

The FAO consultant, Mr. Guillermo Alonso, outlined a suitable legal structure for protection of the marine environment of the region.

Commander Francisco Pizarro, of the Chilean Seaboard and Merchant Navy Department, submitted for consideration a Draft Agreement on regional co-operation for emergency measures against pollution of the Southeast Pacific by hydrocarbons and other harmful substances, in the preparation of which he had been assisted by IMCO.

The IMCO Assistant Regional Adviser on Marine Pollution for Latin America, Mr. Ignacio Vergara, presented an information document containing comments on the recommendations of a working group (which had met at IMCO Headquarters in September 1978) on regional agreements for combating marine pollution.

In order to study the proposals submitted and formulate the conclusions of the meeting, two working groups were established, one to deal with the legal aspects, with Dr. Hugo Lianos as co-ordinator, and the other with the technical and scientific aspects, co-ordinated by the Workshop secretariat.

6. CONCLUSIONS

On the basis of the findings of the working groups, the Workshop adopted the following conclusions:

6.1 Investigation of marine pollution in the region

The Workshop drew up a plan of short-term action on marine pollution in the Southeast Pacific, which is attached as annex I to this report, recommending that PCSP take the necessary steps to apply it.

The Workshop endorsed the broad lines laid down in the paper introduced by Mr. Oscar Guillén, and it considered that the document should be taken into consideration when establishing a long-term research programme in the region, as should the "pilot project" prepared on the basis of that document in the course of the Workshop.

The Workshop also adopted the recommendation submitted by Dr. Raul Canon on the establishment of a special fund for investigation of marine pollution, which is attached as annex IV to this report.

6.2 Legal aspects

Bearing in mind the paper presented by Mr. Guillermo Alonso, the Workshop laid down the basic guidelines which might be used for the conclusion of a Regional Convention on the protection of the marine environment against pollution in the Southeast Pacific, which are to be found in annex II.

The Workshop prepared a Draft Agreement on regional co-operation for emergency measures against pollution of the Southeast Pacific by hydrocarbons and other harmful substances, as set out in annex III to this report. Due regard was given, in this connection, to the paper (CM.PSE/Inf.3) presented by Commander Francisco Pizarro A., of the Chilean Seaboard and Merchant Navy Department and to the preliminary draft drawn up by Dr. Nicolas Campana, of the Merchant Navy and Seaboard Department of Ecuador, which appears as an annex to document CM.PSE/12.

7. CLOSURE OF THE WORKSHOP

Dr. Slaczka, speaking on behalf of IOC and the other sponsoring bodies, thanked the Government of Chile for its firm backing of the Workshop. He observed that the conclusions adopted, both in their scientific and in their legal aspects, would enable progress to be made in investigating and overcoming further problems presented by marine pollution. He added that he had noted the emphasis placed on the need for training skilled personnel, carrying out baseline studies and engaging in a detailed exercise on intercalibration of methods. In conclusion, he stated that IOC would join with the countries of the region in seeking solutions to the problems identified and that the final report would be submitted to UNEP.

The Chairman of the Workshop, Rear-Admiral Guillermo Aldoney H., summarized the main achievements of the Workshop, with special reference to the Action Plan for investigation of marine pollution and to the two proposals for agreements between the countries of the region. He emphasized the importance of regional co-operation for the purpose of ensuring that the results obtained were followed up and effectively applied for the benefit of the countries concerned, through adequate research and the adoption of measures for protection of the marine environment and its resources. He observed that in that context important work was being done by PCSP and by the international organizations concerned with marine pollution, whom he thanked for their sponsorship of the Workshop.

After thanking participants for having designated him Chairman of the Workshop and commending their most constructive work, the presentation of the papers, and the efficiency of the secretariat and of the interpreters, he declared the Workshop closed.

ANNEX I

THE INTERNATIONAL WORKSHOP ON MARINE POLLUTION

IN THE SOUTHEAST PACIFIC

Recommends adoption of the following Action Plan:

PLAN OF SHORT-TERM ACTION ON MARINE POLLUTION IN THE SOUTHEAST PACIFIC

1. FRAME OF REFERENCE

The various problems of regional marine pollution, as well as the research being carried out by the countries of the region, and the existing legislation in the field, were analysed at the International Workshop on Marine Pollution in the Southeast Pacific held in Santiago de Chile from 6 to 10 November 1978, and attended by experts from Panama, Colombia, Ecuador, Peru and Chile.

From the exchange of information it was noted that the countries in question do not yet possess an adequate number of experts in marine pollution and that laboratories are not at present using the same methods of analysis of sea water, sediments and marine organisms in respect of pollutant studies.

Marine pollution in the Southeast Pacific is not at present a widespread problem. However, the constant increase in population and industrial development in the countries of the region undoubtedly represent a potential danger since focuses of pollution from domestic and industrial discharges, as well as those from mining and petroleum, have already been identified.

Although limited research is being carried out in each of these countries, the characteristics and magnitude of the problem require immediate and co-ordinated regional action.

Pending the establishment of a properly co-ordinated research programme, the Workshop agreed to propose that the present Action Plan be implemented.

2. OUTLINE OF THE RESEARCH

The following should be priority requirements:

(a) to start or continue, as necessary, in each country, basic monitoring studies at polluted or non-polluted stations or localities in order to ascertain the basic patterns of pollution and their variations. This will provide a scientific basis for assessing the various marine pollution problems in the region;

(b) to set up as soon as possible an Expert Working Group on Intercalibration with responsibility for the conduct of the intercalibration and the choice of the most suitable methods;

(c) to develop a training programm , PCSP being requested to arrange with IOC for its incorporation in TEMA (Training, Education and Mutual Assistance in the Marine Sciences).

3. CO-ORDINATION MACHINERY

For implementation of the Action Plan and co-ordination of the future programme, the Workshop recommends that the following machinery be established:

(a) National level:

(i) designation of a National Co-ordinator, concerning which PCSP is asked to take the necessary steps with the governments of the region;

the National Co-ordinator would, in addition to his duties in his own country, be the contact point for regional activities, including relations with PCSP;

(ii) establishment of a "National Committee for the Study and Prevention of Marine Pollution". This Committee would comprise representatives of the institutions conducting research in this field;

The principal functions of the National Committee would be:

(i) to organize working groups on research into trace metals, pesticides, hydrocarbons, and organic and other discharges,as required by the problems of each country;

(ii) to prepare inventories of available resources for the study of marine pollution and to compile directories of research institutions and research workers;

(iii) to establish research priorities under the proposed Action Plan, after evaluating the projects;

(iv) to obtain the support of the competent authorities for the conduct of the research required in each country according to established priorities;

(v) to promote the establishment of a Marine Pollution Documentation and Information Centre; and

(vi) to propose, and advise on, the execution of marine pollution educational and extension programmes.

(b) Regional level

PCSP would serve as the regional co-ordinating body for the Action Plan.

4. FUNDING

At present, the countries concerned are conducting research with their own inadequate funds. In this connection, the proposed Action Plan will require an increase in the budgets of the institutions that participate in the investigations.

With regard to the training programme and the intercalibration exercise, support is considered necessary from such international organizations as UNEP, IOC and FAO, as it is for the formulation of a long-term regional programme.

ANNEX II

THE INTERNATIONAL WORKSHOP ON MARINE POLLUTION

IN THE SOUTHEAST PACIFIC

Considering:

The initiative taken at the tenth regular meeting of the Permanent Commission for the South Pacific, in resolution 4, which convened an International Workshop on Marine Pollution in the Southeast Pacific,

Resolution 12 of the fourteenth meeting of the Permanent Commission for the South Pacific, whereby the Secretary-General was entrusted with preparation of a Draft Regional Convention on Protection of the Southeast Pacific against Pollution, along the basic lines established at the International Workshop on Marine Pollution,

The need to establish a legal mechanism for the protection and preservation of the marine environment, through close co-operation between the States and the appropriate international organizations,

Recommends:

GUIDELINES FOR A CONVENTION ON PROTECTION
OF THE MARINE ENVIRONMENT AGAINST POLLUTION
IN THE SOUTHEAST PACIFIC

1. Geographical coverage

The geographical scope of the Convention and of the resepective Protocols should be defined.

2. Definitions

For a definition of what is to be understood by pollution of the marine environment, that provided by GESAMP* should be borne in mind: "Introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazard to human health, hindrance to marine activities including fishing, impairing of quality for use of sea water and reduction of amenities".

3. General obligations

The Convention should establish that the Contracting Parties will, individually and collectively, take all necessary steps to prevent, reduce and control in the areas of application of the Convention and/or of the Protocols, any pollution endangering human health, harming living resources and fishing, reducing amenities or hindering other legitimate uses of the sea.

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* GESAMP is the IMCO/FAO/Unesco/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on Scientific Aspects of Marine Pollution.

The Contracting Parties shall promote the adoption and application of relevant measures for protection of the marine environment and endeavour to harmonize their national policies in this respect.

The Contracting Parties shall apply measures they adopt under the Convention and/or Protocols in a form such as will not cause prejudice through pollution to other States and their environment, and ensure that pollution caused by incidents or activities under their jurisdiction or control does not extend beyond the area in which the State in question exercises sovereign rights under this Convention.

4. Measures for preventing, reducing and controlling pollution of the marine environment

The measures adopted by the Contracting Parties to prevent, reduce and control pollution of the marine environment shall include, amongst others, those designed to reduce to the greatest possible extent:

(a) discharges of toxic, injurious and harmful substances, especially those of a persistent nature:

(i) from terrestrial sources;

(ii) from or through the atmosphere;

(iii) as a result of dumping.

(b) pollution caused by vessels, with particular reference to measures for preventing accidents, dealing with emergencies, ensuring the security of operations at sea, preventing deliberate discharges and regulating the design, construction, equipment, operation and crewing of vessels;

(c) pollution from installations and devices used in prospecting and working natural resources of the sea bed and its substratum, and particularly measures to prevent accidents and deal with emergencies, to ensure the security of operations at sea and to regulate the design, construction, equipment, operation and manning of such installations and devices.

5. Co-operation in the event of a pollution emergency

The Convention shall provide for co-operation in the event of a pollution emergency, in accordance with the terms of the Draft Agreement on regional co-operation for emergency measures against pollution of the Southeast Pacific by hydrocarbons and other harmful substances.*

* Should this Draft Agreement be approved before the Convention on Protection of the Marine Environment against Pollution in the Southeast Pacific, it will become a Protocol, forming part of the Convention once it has entered into force.

6. Information exchange, research co-operation and technical assistance

The Convention and/or the Protocols should provide for the exchange of scientific data and information among the Contracting Parties.

The Convention and/or Protocols should stipulate that it is incumbent upon the Contracting Parties to extend and co-ordinate their national research programmes relating to marine pollution, whatever its type, and to collaborate in preparing and executing regional and international research programmes.

The Convention and/or Protocols should stipulate that it is incumbent upon the Contracting Parties to collaborate in providing technical and other assistance, in connection with any form of marine pollution, to Contracting Parties on request.

7. Monitoring

It is incumbent upon the Contracting Parties, so far as their resources permit, and the appropriate international organizations, to co-operate in pollution monitoring programmes within the scope of this Convention.

8. Responsibility and compensation

The Convention and/or Protocols should establish suitable procedures for determining liability for damages as a result of pollution due to any violation of the Convention and/or Protocols.

9. Liability exemptions

Provision shall be made for liability exemptions in cases of force majeure when there is a threat to the safety of human life or of a vessel or aircraft or other installation in the marine environment.

10. Institutional agreements

The Convention and/or Protocols shall designate an international organization, which may be the Permanent Commission for the South Pacific, to assume responsibility for institutional aspects relating to the Convention and/or Protocols*, laying down its functions and responsibilities in this respect, and its financing arrangements.

11. Scientific and technical advisory services

The Convention and/or Protocols should provide for meetings of ad hoc panels of experts appointed by the Contracting Parties in order to examine all relevant scientific and technical material. International organizations may take part as observers.

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* For the incorporation of other States not members of the Permanent Commission for the South Pacific, accession arrangements will be made.

12. Reports

The Convention and/or Protocols should stipulate that it is incumbent upon the Contracting Parties to submit to the Permanent Commission for the South Pacific, within the shortest possible time, reports on steps taken to apply the Convention and/or Protocols.

13. Supervision of application

The Convention and/or Protocols should stipulate that it is incumbent upon the Contracting Parties to co-operate in working out procedures for effective application of the Convention and/or Protocols, including procedures for providing information on the activities of vessels and aircraft infringing the Convention and/or Protocols.

14. Adoption of additional Protocols

Procedure should be established for the adoption of additional Protocols to the Convention.

15. Amendment of the Convention and/or Protocols

The Convention shall lay down procedure for amendment of the Convention and/or Protocols, the prime requirement being a consensus.

16. Settlement of disputes

The Convention and/or Protocols should provide for machinery for the settlement of disputes.

17. Participation

The Convention and/or Protocols shall remain open to the accession of third States, subject to the prior unanimous approval of the Contracting Parties.

18. Entry into force of the Convention and/or Protocols

The Convention and/or Protocols shall establish the conditions for entry into force in accordance with the norms of international law, with due regard to the legal structure of the Permanent Commission for the South Pacific.

ANNEX III

AGREEMENT OF THE INTERNATIONAL WORKSHOP ON

MARINE POLLUTION IN THE SOUTHEAST PACIFIC

DRAFT AGREEMENT ON REGIONAL CO-OPERATION FOR EMERGENCY MEASURES AGAINST POLLUTION OF THE SOUTHEAST PACIFIC BY HYDROCARBONS AND OTHER HARMFUL SUBSTANCES

The Government of Colombia

The Government of Chile

The Government of Ecuador

The Government of Panama

The Government of Peru

Recognizing that serious marine pollution by hydrocarbons and other harmful substances in the Southeast Pacific is a danger for the coastal States and for the marine ecosystem,

Considering that the co-operation of all coastal States is necessary to counter such pollution,

HAVE AGREED AS FOLLOWS:

Article I

The High Contracting Parties agree to unite their efforts for the purpose of taking the necessary steps to neutralize or control harmful effects in instances of serious and imminent danger to the marine environment, the coast and related interests of one or more of them, arising from the presence of large quantities of hydrocarbons and other substances resulting from emergencies and polluting or threatening to pollute the marine area delimited in the following article.

Article II

This Agreement shall cover the sea area of the Southeast Pacific bounded by the sixtieth parallel S, the limit between the Republic of Panama and Costa Rica in the north, and the South American Continent in the East.

Article III

For the purpose of this Agreement, the expression "related interests" shall refer to the interests of a coastal State directly affected or threatened and, in particular, to the following aspects:

(a) activities in coastal waters, islands, ports and estuaries, including those relating to fishing;

(b) the historical and touristic assets of the area concerned, including sporting and recreational activities;

(c) the quality of life of coastal populations; and

(d) the conservation of living resources, particularly marine fauna and flora.

Article IV

The High Contracting Parties shall seek to establish and promote contingency plans and programmes for countering marine pollution by hydrocarbons and other harmful substances, and shall maintain or increase the necessary resources therefore through bilateral or multilateral co-operation and individual action by each State. Such resources shall include, in particular, equipment, vessels, aircraft and experienced personnel for emergency operations.

Article V

The Parties shall develop and apply, either individually or through bilateral or multilateral co-operation, monitoring activities covering the Southeast Pacific, in order to obtain accurate and timely information on the emergency situations referred to in Article I of this Agreement.

Article VI

In the event of harmful substances packed in cargo containers, in movable tanks or in mobile tanker vehicles, such as lorries or railway wagons, being jettisoned or lost overboard, the Parties shall co-operate, so far as their resources permit, in salvaging and retrieving such substances for the purpose of reducing the danger of marine pollution.

Article VII

The High Contracting Parties undertake to provide one another with information on the following matters:

(a) the competent national organization or authorities responsible for combating marine pollution;

(b) the appropriate national authorities and agencies for receiving information on marine pollution and those responsible for assistance programmes or measures among the Parties; and

(c) research programmes being carried out with a view to seeking new methods and technologies for avoiding marine pollution, together with their findings.

Article VIII

The High Contracting Parties undertake to co-ordinate the use of their communication media for the purpose of ensuring the reception, transmission and circulation of all prompt and reliable information on the emergency situations referred to in Article I.

Article IX

. The High Contracting Parties shall issue instructions to captains of ships sailing under their flags and to captains or pilots of aircraft registered in their territories to provide information, as promptly as possible and on the basis of the instructions contained in Annex I to this Agreement, on the following circumstances:

(a) the presence, characteristics and extent of oil slicks and other harmful substances sighted at sea which may represent an imminent threat to the marine environment and related interests of one or more Contracting Parties; and

(b) any other emergency causing or liable to cause marine pollution.

Information covered by subparagraph (a) above shall be immediately communicated to those Contracting Parties which may be affected by the pollution hazard involved.

Article X

The High Contracting Parties, when faced with an emergency situation as defined in Article I of this Agreement, shall take the following measures:

(a) they shall assess the nature and magnitude of the emergency and, as the case may be, the type and approximate quantity of hydrocarbons or pollutants, including the direction and drift velocity of the slick;

(b) they shall take all reasonable steps to avoid or reduce the effects of pollution;

(c) they shall provide immediate information concerning action under the foregoing items and any other measures to combat pollution that have been, or are to be taken; and

(d) they shall continue to observe the emergency situation, throughout its duration, in order to follow its evolution and the general trends in the pollution phenomenon. The information obtained from such observation shall be communicated to the Contracting Parties in the form provided for in the previous article.

Article XI

High Contracting Parties requiring assistance for pollution control, in the emergency situations referred to in Article I, may request the co-operation of the other Parties, particularly those which may be affected by the pollution involved.

Such co-operation may include the advisory services of experts and provision of the necessary equipment and supplies for countering pollution.

The Contracting Parties to which such application is made shall give prompt consideration to the request, within the limits of their possibilities, and shall immediately notify the Party requesting aid of the form and scale of co-operation they are able to provide.

Article XII

The High Contracting Parties shall hold regular sessions at least every two years and extraordinary sessions whensoever at least two of them so request.

Regular sessions shall be held in conjunction with sessions of the Scientific Committee of the Permanent Commission for the South Pacific, or of its Legal Commission.

At the regular sessions, the High Contracting Parties shall consider the following matters:

(a) the degree of application of this Agreement and the effectiveness of measures undertaken, together with the need for any other types of activity;

(b) the need for amendment or reform of any of the annexes to this Agreement, together with any changes to or amplification of resolutions adopted; and

(c) any other function which may further the purposes of this Agreement.

Article XIII

For the purpose of administering and operating this Agreement, the High Contracting Parties agree to designate the Permanent Commission for the South Pacific as the Executive Secretariat of the Agreement. An additional Protocol shall establish the procedure and financial arrangements for carrying out this function by the aforesaid international body.

Article XIV

This Agreement shall enter into force on.....
.....in witness thereof, the undersigned, being duly authorized thereto, have signed this Agreement.

DONE AT.....
in five copies in Spanish and English, the two texts being equally authentic.

Appendix 1

Content of reports to be submitted under Article IX of the Protocol

1. Wherever possible, each report shall state, in general:

(a) the source of pollution (identity of the vessel, when applicable);

(b) the geographical position, the time and the date of the incident or observation;

(c) the wind and sea conditions in the area;

(d) if the pollution is caused by a vessel, relevant particulars of the condition of the vessel.

2. Wherever possible, each report shall provide, in particular:

(a) a clear indication or description of the harmful substances involved, including their correct technical names (commercial appellations should not be used in their stead);

(b) an exact statement or estimate of the quantities, concentrations and probable state of the harmful substances which have been or may possibly be discharged into the sea;

(c) where applicable, a description of packaging and indentification marks; and

(d) the name of the consignor, the consignee or the manufacturer.

3. Each report shall, so far as possible, clearly state whether the harmful substance which has been or may possibly be discharged consists of hydrocarbons, a harmful liquid, solid or gas, and whether the substance concerned was or is being transported in bulk or in packages, containers, mobile tanks, tanker lorries or tanker wagons.

4. Each report shall also contain, as applicable, any other relevant information requested, or deemed appropriate by the person drawing up the report.

5. Persons referred to in article 8 (1) of this Protocol shall:

(a) complete the initial report as fully as possible, as applicable, with information regarding the evolution of the situation; and

(b) make every effort to meet any requests for additional information by the States concerned.

ANNEX IV

THE INTERNATIONAL WORKSHOP ON MARINE POLLUTION

IN THE SOUTHEAST PACIFIC

Considering:

That the problem of marine pollution, from various causes, is already a reality in the waters of the Southeast Pacific;

That there is an urgent need fo immediate action by the scientific community to study, evaluat d prevent further deterioration of the marine environment;

That it is necessary to trai nd bring up to strength the working groups set up in this connection, through training and equipment programmes; and

That scientific bodies lack the necessary funds for addressing themselves to the problem;

Recommends:

That the Permanent Commission for the South Pacific make representations to Member Governments for the immediate establishment of a Special Fund, to be distributed from 1979 onwards, in accordance with national priorities, among the research centres attached to the National Committee for the Study and Prevention of Marine Pollution.

ANNEX V

THE INTERNATIONAL WORKSHOP ON MARINE POLLUTION

IN THE SOUTHEAST PACIFIC

Agenda

1. GENERAL ASPECTS
   - 1.1 Abiotic marine conditions in the region.
   - 1.2 Biotic marine conditions in the region.
     - 1.2.1 Ecosystems.
     - 1.2.2 Fish resources and fisheries.
   - 1.3 Domestic and industrial sewage pollution.
   - 1.4 Heavy metal pollution.
   - 1.5 Pollution by oil and oil derivatives.
2. MARINE POLLUTION IN THE REGION
3. POLICY AND LEGISLATION RELATED TO MARINE POLLUTION
4. TENTATIVE PLAN FOR A REGIONAL PROGRAMME
   - 4.1 Tentative regional programme of marine pollution research and monitoring.
   - 4.2 Juridical aspects of the prevention of marine pollution in the region.
5. APPROVAL OF THE SUMMARY REPORT

ANNEX VI

THE INTERNATIONAL WORKSHOP ON MARINE POLLUTION IN THE SOUTHEAST PACIFIC

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