

**WORLD HEALTH ORGANIZATION  
WESTERN PACIFIC REGIONAL  
ENVIRONMENTAL HEALTH CENTRE**

**(EHC)**



**SUMMARY OF 1993 ACTIVITIES**

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Western Pacific Regional Environmental Health Centre  
(EHC)

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## **1. INTRODUCTION**

Established in 1979, the WHO Western Pacific Regional Environmental Health Centre (EHC) is the technical arm of the WHO Regional Office for the Western Pacific, responsible for promoting and facilitating effective collaboration among Member States and supporting the development of self-reliant institutions and capabilities in the field of environmental health. Formerly known as the WHO Western Pacific Regional Centre for the Promotion of Environmental Planning and Applied Studies (PEPAS) and renamed in 1992, the Centre implements activities in five principal programme areas: community water supply and sanitation; environmental health in rural and urban development and housing; health risk assessment of potentially toxic and hazardous chemicals; control of environmental health hazards; and food safety. The staff resources of the Centre during 1993 are listed in Annex 1.

EHC collaborates with Member States in conducting national and regional training activities to develop human resources in environmental health, and provides technical cooperation services to promote the development of national environmental health policies and programmes. It also serves as an environmental health information service centre, facilitating information exchange and cooperation among national institutions and WHO collaborating centres in environmental health. The Regional collaborating centres are part of an international network of institutions that carry out selected activities in support of WHO's environmental health programmes.

## **2. HIGHLIGHTS OF ACTIVITIES UNDERTAKEN**

In 1993, EHC carried out 42 technical cooperation activities in 15 countries and areas of the Western Pacific Region. These collaborative ventures were implemented by staff members and/or consultants, and included three regional group educational activities (Annex 2). The consultants who participated in activities during the year are listed in Annex 3.

## **2.1 Community water supply and sanitation**

In the Lao People's Democratic Republic, a rural water supply and sanitation project, funded by the Swedish International Development Authority (SIDA) was implemented. The project involved the construction of latrines, roof catchment water supplies and a gravity fed piped rural water supply; and also addressed issues related to cost recovery, community organization and appropriate design criteria.

EHC cooperated with the Viet Nam Ministry of Health in formulating projects to improve water supply and sanitation in schools, with particular emphasis on health education. A workshop was held to finalize details of the proposals, and funding is being sought from among external support agencies which have expressed interest in implementing such projects in Viet Nam.

An assignment was carried out in Western Samoa to assess, among other things, the requirements for chlorinating Apia's water supply. Cost estimates were made, necessary initial actions recommended, and the relative priority of the projects was discussed.

EHC also collaborated with Western Samoa in conducting two workshops focusing on food, water and sanitation. Approximately 30 food handlers and health inspectors attended each of these courses which concentrated on disease control in relation to food, water and sanitation. This subject area was of particular interest as the country had recently experienced a typhoid fever outbreak.

In Malaysia, EHC cooperated with the Ministry of Health in developing a scheme for training and formally qualifying sewage and water treatment plant operators. The qualification system will be required following privatization of sewage disposal services and some of the water supply systems to ensure operators meet the desired standards of performance.

In cooperation with the United Kingdom's Overseas Development Administration, and the Government of Japan, EHC convened a subregional workshop on drinking water quality monitoring and surveillance for Pacific island countries in

Suva, Fiji from 6 to 10 December 1993. Twenty-nine people attended the workshop in which the new WHO Guidelines on Drinking Water Quality were reviewed and action plans formulated to create practical surveillance programmes. In many Pacific island countries, drinking water pollution is becoming an ever-increasing problem due to growth and development pressures on existing supplies. Follow-up action will be taken to collaborate with countries on the implementation of their plans.

## **2.2 Environmental health in rural and urban development and housing**

Activities carried out in this programme area focused on training, the provision of technical advisory services; the exchange of information on environmental assessment and management; waste management; and the improvement of environmental health in urban areas.

### **2.2.1 Environmental assessment and management**

EHC convened a five-day workshop on environmental health impact assessment (EHIA) in November in Kuala Lumpur. It was attended by 13 participants from the health and environmental agencies of eight countries and areas in the Region. The participants reviewed the current status of EHIA programmes in their countries, as well as the constraints on further development; examined procedures and techniques for EHIA, and developed plans for promoting EHIA. This regional workshop provided a useful forum for the exchange of experiences and views on EHIA, as well as for the review of a draft EHIA guideline document being developed by WHO consultants. Follow up national workshops on EHIA will be carried out in 1994.

Recognizing an urgent need to develop human resources in the environmental health field in the Lao People's Democratic Republic, EHC collaborated with the National Institute of Hygiene and Epidemiology in conducting a national workshop on management of environmental health hazards. Held in February 1993, this was the first national workshop to focus on the environmental health and pollution problems resulting from socioeconomic development.

In Malaysia, EHC continued to collaborate with the National Institute of Public Administration in conducting training courses in environmental planning and management. Four such collaborative courses were carried out: a course on environmental impact assessment held in May in Sarawak; a course on environmental planning and control in June in Kuala Lumpur; a course on environmental risk assessment and management in July in Kuala Lumpur; and an international course on integrated environmental planning and management in September/October in Kuala Lumpur. These courses covered various topics in environmental planning and management which were particularly relevant to the needs of participants.

EHC cooperated with the Philippines Environmental Management Bureau in conducting a five-day workshop on environmental risk assessment and control technology in August. The workshop was attended by 29 participants, mainly engineers and technical staff involved in pollution control in industry and government. The approach used in this workshop was to address topics in the context of problem-solving exercises based on real-world cases. These exercises were quite useful in helping the participants learn the process and techniques of environmental risk assessment and control, which were relatively new to most of them.

In its role as a regional information centre, EHC continued to promote the exchange of information on environmental and health impact assessment through its information network, EIA/EHIANET.

### **2.2.2 Waste management**

The negative health and environmental impacts resulting from inadequate solid waste management have become a major problem in China. In April, EHC collaborated with the Chinese Research Academy of Environmental Sciences in conducting a national workshop on the management of municipal and industrial solid wastes in small and medium-sized cities in Yangzhou, Jiangsu Province. The workshop improved the participants' understanding of the need for cooperation in providing appropriate municipal and industrial solid waste management systems in the country.

As a follow-up to several previous advisory service activities on waste management in the Lao People's Democratic Republic, EHC collaborated with the Ministry of Public Health in conducting a workshop on waste disposal management in November. The workshop covered the management of wastewater and solid waste, as well as recycling and resource recovery from waste. It also included a discussion of the development of waste management policies and guidelines to promote appropriate systems in provinces.

In Cambodia, EHC collaborated with the Ministry of Health by providing technical input to a clean-up campaign for Phnom Penh held in July. Despite the constraints in improving waste management practices in the city, the campaign developed public awareness of the garbage problems and earned public cooperation and support.

At the request of the United Nations Centre for Regional Development (UNCRD), an EHC staff member participated in a seminar-workshop on Partnerships towards Responsive Solid Waste Management in South-East Asia. This meeting was organized by UNCRD in cooperation with the Ministry of Housing and Local Government and the Municipal Council of Penang Island, Malaysia. The seminar-workshop, held in Penang in January, discussed partnerships in solid waste collection and recycling; the management of hazardous and hospital wastes; and final disposal. These issues were addressed in the context of rapidly growing urban areas in the South-East Asia Region. A total of 28 professionals participated, mainly from Indonesia, Malaysia, the Philippines, Singapore and Thailand.

In early 1993, EHC collaborated with the Ministry of Health, Papua New Guinea, in an evaluation of the country's hospital waste situation. Concern was focused on hospital waste disposal in 1991 when a Hospital Waste Management Committee was formed to formulate a national policy. In response to the Government's request, an EHC staff member visited 14 hospitals and health centres throughout the country, made recommendations to the Committee, and prepared national guidelines for hospital waste management. The evaluation also indicated that better communications, heightened awareness, and sharing of scarce technical expertise within and among institutions could help mitigate

hospital waste management problems, a number of which do not require "hi-tech" solutions.

EHC's collaboration with the Ministry of Health, Malaysia, in conducting a regular intensive course on environmental health for public health engineers continued in 1993. The course was held in October and attended by 22 participants, mostly public health engineers from the various States. The subjects covered included the management of industrial hazardous waste and clinical wastes, and occupational health and safety. Field assessments and group exercises were carried out by the participants to enhance their appreciation of real-world problems and possible solutions.

To initiate implementation of its national action plan and guidelines for hospital waste management (prepared in 1992) the Ministry of Health, Malaysia, conducted a training course on hospital waste management in October. EHC collaborated in this activity by providing a consultant to carry out this training-of-trainers. A total of 109 key hospital personnel involved in waste management attended. The consultant prepared a training package consistent with recognized needs and compatible with the national plan and guidelines. In conjunction with this activity, the consultant also drafted guidelines for health care waste management for use in developing countries in the Region.

EHC has continued to promote the exchange of information on solid waste management through its information network, SWMNET.

### **2.3 Chemical safety**

#### **2.3.1 UNDP/WHO Project on Safety and Control of Toxic Chemicals and Hazardous Wastes**

Final activities in connection with the UNDP/WHO Project on Safety and Control of Toxic Chemicals and Hazardous Wastes, were completed. Five countries (China, Malaysia, Philippines, Republic of Korea, and Singapore) participated in the project which undertook to profile country situations, develop national priorities and proposals for their solution, and provide training for local professionals. In 1993, EHC collaborated with the Environmental Management

Bureau, Department of Environment and Natural Resources, Philippines, in preparing proposals for improving its capabilities for environmental assessments and environmental testing services. In the same activity, the role and functioning of a chemical emergency response unit was defined. Strengthening environmental investigatory and emergency response capabilities were identified as priorities during a national workshop undertaken in the UNDP/WHO project.

In China, EHC collaborated in the conduct of a national training course on chemical safety. The course compared chemical safety information and management practices in China with those in common use in other countries. The activity revealed that considerable chemical safety expertise is available locally but that there is a need for chemical safety information from and coordination with international sources.

The UNDP/WHO project has raised the chemical safety awareness of participating countries and has provided them with a much enhanced sense regarding their programme strengths and weaknesses.

### 2.3.2 Other chemical safety activities

In April, EHC collaborated with the Ministry of Health, Brunei Darussalam in assessing hazardous waste management practices in the country. Oil-related business dominates domestic industry and consequently produces and disposes of the bulk of the country's hazardous waste. The non-oil business sector, however, is expected to expand and to produce an increasing proportion of the country's hazardous waste. There exists concern that, in the absence of legislation and/or regulatory guidelines, hazardous waste mismanagement could adversely affect the country's environment. The activity identified existing in-country expertise and governmental units which could provide continuing advice regarding hazardous waste management. It also outlined an approach to strengthen the country's capabilities for hazardous waste management.

Hazardous waste disposal in the Pacific island countries is hampered by the lack of land-based disposal facilities and resource recovery alternatives. EHC continued a project begun as an activity to develop a survey of hazardous waste in 12 Pacific island countries and to develop an action plan for managing

these wastes. Among other things, the survey report recommended that high priority be given to upgrading the storage arrangement for specific pesticides in the Federated States of Micronesia and in Vanuatu. In September, EHC, in collaboration with the two governments, implemented the recommendation. A staff member visited each country and conducted a workshop in which government employees prepared a workplan and a health and safety plan for repackaging spilled pesticides. Workshop participants then implemented the workplan in accordance with the health and safety plan. Approximately 450 kilograms of various agricultural pesticides and herbicides were repackaged in the Federated States of Micronesia; while in Vanuatu, approximately 2 500 kilograms of DDT were repackaged and securely stored. The activity not only ameliorated a potentially dangerous situation, but also instilled workshop participants with a sense of confidence in their ability to handle chemical spills.

In the Cook Islands, EHC collaborated with the Ministry of Health in a review of the country's programme of occupational safety and health. Interviews were conducted with representatives from governmental, industrial, and medical sectors, and lectures were given on various aspects of occupational health and safety. Draft occupational safety and health legislation which addresses many of the deficiencies in existing legislation was under consideration. This activity served to highlight the fact that the new legislation would require detailed guidelines for implementation and that the lack of incountry sampling expertise and testing facilities would hamper implementation.

In November, EHC collaborated with the Malaysian Ministry of Health, in conducting a national workshop on occupational safety and health. Participants heard technical presentations and then deliberated on the collection of surveillance data and the role of the Ministry in occupational health. The workshop was an effective forum for assessing the current status of occupational health in Malaysia and delineating future directions.

The EHC staff responsible for chemical safety participated in the Seventh Meeting of the International Programme on Chemical Safety (IPCS) Programme Advisory Committee (PAC) which was convened in Brussels, Belgium, 6-8 October 1993. The PAC reviewed IPCS progress (including reports on WHO

regional chemical safety programmes) and deliberated regarding possible future directions.

In December, a lecture was presented to third-year students in a course on industrial chemistry at the University of Malaya in Kuala Lumpur. The lecture focused on the health effects of common industrial chemicals and provided an introduction to occupational health. Because these students will soon be working in and managing Malaysia's industries, raising their awareness at this point is an effective way of enhancing the country's overall chemical safety.

## **2.4 Control of environmental health hazards**

### **2.4.1 Air quality management**

During 1993, EHC collaborated with Brunei Darussalam, China, Malaysia and the Philippines on various aspects of air quality management.

Serious air pollution from coal combustion and industrial processes exists in many cities of China. EHC, in cooperation with WHO headquarters, collaborated with relevant agencies on air pollution and health effects studies in China. A pilot study in Shenyang found direct relationships between air pollution levels and total mortality and lung-heart disease mortality. To follow up on the study, a national workshop on air pollution epidemiology was held in Beijing in October 1993.

A major air quality management study of the Kelang Valley Region of Malaysia, funded by the Japan International Cooperation Agency, was completed in 1993. EHC was represented on the Technical Committee for the study. A seminar to present the results of the study was held in Kuala Lumpur on 16-17 October 1993 where an EHC staff member presented the keynote lecture. Lectures on air quality management were also given at two courses in Malaysia - an integrated environmental planning and management course organized by the National Institute of Public Administration, and an intensive course on environmental health for public health engineers, organized by the Ministry of Health.

EHC continued to collaborate with the Environmental Management Bureau in the Philippines on the preparation of an air quality management master plan for the country. A draft of the plan was prepared, and positive developments in air quality management included the introduction of low lead gasoline, the preparation of a draft Clean Air Bill and the issuing of revised air quality standards.

A mission was undertaken in Brunei Darussalam on air quality management. The air quality of Brunei is generally pristine, and the strategy of air quality management activities should be to preserve that condition. A large part of the country is forested, and it is evident that vegetation fires and open burning occur frequently. There is a need to restrict these. With little industrial development, motor vehicles are the predominant potential sources of air pollution. Recommendations on measures to control emissions from motor vehicles and on requirements for an air quality monitoring programme were made.

#### 2.4.2 Water quality management

A mission on water quality management in Brunei Darussalam was undertaken to review the water pollution problems and to train staff of the Ministry of Health on monitoring procedures and interpretation of water quality data. While there are no serious water pollution problems in the country, it was concluded that there is a need for better pollution control standards.

At the request of the Tonga Water Board, EHC collaborated in an investigation of contamination of the water supply by diesel fuel. A spill from the diesel fuel tanks for the well pumps gained access to the aquifer resulting in taste and odour problems. Advice was provided for decontaminating the water storage reservoirs and reticulation system; and a field inspection was carried out to determine the cause of the contamination and recommend corrective actions. Recommendations were made for improving the handling and disposal of fuel and waste, as well as the drainage around the pump installations to prevent future contamination.

In China, groundwater pollution is a growing problem because of increasing industrialization; inadequate disposal of toxic industrial wastes and municipal

solid wastes; the natural occurrence of fluoride mineralization; and nitrate pollution of shallow wells from the application of fertilizers to agricultural land. EHC collaborated with the Chinese Research Academy of Environmental Sciences in conducting a national workshop on groundwater resources management during which participants familiarized themselves with various measures to control groundwater pollution.

To avoid the deterioration of water quality during natural and man-made disasters such as floods, disease outbreaks, industrial accidents and earthquakes, EHC cooperated with the Ministry of Health to draft a Water Quality Disaster Management Plan. The Plan will be useful at the district, state and federal levels should a disaster occur that threatens the quality of drinking water.

In the Republic of Korea, EHC and the WHO Regional Information Systems staff cooperated with the Ministry of Environment on the development of an environmental information database. Computer needs in support of the data collection and the data base, and geographical information systems needs were reviewed. Advice was also given on the development of a telemetering system for water quality.

EHC cooperated with the Mekong Secretariat in providing training in water quality data handling and sediment sampling to riparian Mekong River countries in May. The training was useful in familiarizing participants with the requirements of the UNEP/WHO Global Environmental Monitoring System (GEMS) Water project and in strengthening the countries' capabilities to monitor and assess water quality. In November, EHC participated in a Senior Expert Meeting on Mekong Water Quality Monitoring and Assessment which was held to review the project and discuss follow-up action that would be required.

## **2.5 Food safety**

In April, EHC collaborated with the National Institute of Nutrition in Viet Nam in conducting two courses on food safety. The courses were useful in developing food inspection expertise by enhancing the skills and knowledge of health officials.

In Viet Nam, there is concern that food may be contaminated with aflatoxins as a result of poor harvesting and storage conditions, and the climatic conditions of high temperature and humidity. In view of the health implications that may arise from the consumption of aflatoxin-contaminated food, EHC is funding a two-year (1994-1995) national project on control and reduction of aflatoxin in food. The project will introduce an educational training programme to users, producers, importers and exporters of food prone to aflatoxin contamination. Through this project, a monitoring programme for aflatoxin contamination in foods will be initiated.

In collaboration with WHO Headquarters food safety staff and the Industry Council for Development, national training courses in Hazard Analysis Critical Control Point (HACCP) principles were held in China and the Philippines in May. These courses helped to strengthen the national food safety programmes in these countries.

### **3. COLLABORATION WITH INTERNATIONAL AND BILATERAL AGENCIES**

EHC continued its interaction with other international and bilateral agencies involved in environment-related activities. Activities implemented during the year as part of this collaboration included the air pollution epidemiology study and workshop in China, funded by UNEP; the pesticide repacking projects in Federated States of Micronesia and Vanuatu, funded by the Special Programme on Technology Transfer (SPTT) of the Government of Japan; a rural water supply and sanitation project in the Lao People's Democratic Republic, funded by the Swedish International Development Authority (SIDA); a regional workshop on environmental health impact assessment funded by the Japan Shipbuilding Industry Fund; and a sub-regional workshop on drinking-water quality monitoring and surveillance for Pacific Island countries funded by SPTT and the Overseas Development Administration of the United Kingdom. EHC staff also participated in meetings organized by the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Centre for Regional Development (UNCRD), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP).

#### **4. INFORMATION SERVICES, REPORTS AND DOCUMENTS**

EHC plays an important role in providing information services in environmental health. The Centre attended to about 200 requests for information on various environmental health topics during the year. Information exchange activities continued through the networks on environmental impact assessment/ environmental health impact assessment (EIA/EHIANET), food safety (FOS INFONET) and solid waste management (SWMNET).

Most of the reports on activities implemented in 1993 (as listed in Annex 2) are available on request from EHC. Other technical documents issued in 1993, which are available on request, are listed in Annex 4.

## ANNEX 1

### EHC STAFF DURING 1993

Dr P. Guo	Director
<b>Technical staff</b>	
Mr K. Rolfe	Air Quality Management Specialist
Dr W. Harrington	Chemical Safety Specialist
Dr H. Ogawa	Environmental Systems Engineer
Vacant	Food Safety Specialist
Mr B. Fisher	Sanitary Engineer
Mr T. Dafoe (until 24 Sep 1993)	Water Quality Management Specialist
<b>Administrative staff</b>	
Ms L.Y. Chan	Administrative Officer
<b>Programme support staff</b>	
Ms Y.M. Tan	Special Assistant
<b>Secretaries</b>	
Ms Normah Mahmod	
Ms M.R. Tan	
Ms M. Pieris	
<b>Drivers/Messengers</b>	
Mr Shahrudin Asmuni	
Mr Masim Satarum	

**TECHNICAL COOPERATION ACTIVITIES AND FIELD VISITS - 1993**

<b>Activity</b>	<b>Carried out by</b>	<b>Date</b>
<b>BRUNEI DARUSSALAM</b>		
1. Collaboration on air quality management	K. Rolfe	31 Jan - 10 Feb
2. Hazardous waste disposal	W. Harrington	11-21 Apr
<b>CAMBODIA</b>		
1. Environmental health programme development	P. Guo	19-24 Feb
2. Technical collaboration on solid waste management	P. Guo	8-15 Aug
<b>CHINA</b>		
1. National training course on chemical safety	W. Harrington	28 Mar - 3 Apr
2. National workshop on management of municipal and industrial solid wastes in small and medium-sized cities	L. Diaz H. Ogawa	10-22 Apr
3. Health effects of air pollution in China	B.H. Chen K. Rolfe	20 Apr - 2 May
4. Assessment of urban environmental management programmes	H. Ogawa	22 Apr - 6 May
5. National workshop on management of groundwater resources	T. Dafoe	4-10 Jul
6. WHO/UNEP national workshop on air pollution epidemiology	B.H. Chen D.W. Dockery	12 Oct - 4 Nov

Activity	Carried out by	Date
<b>COOK ISLANDS</b>		
1. Occupational safety and health programme review	W. Harrington	18-23 Sep
<b>LAO PEOPLE'S DEMOCRATIC REPUBLIC</b>		
1. National workshop on management of environmental health hazards	H. Ogawa P. Guo	2-18 Feb
2. Environmental health programme development	P. Guo	10-19 Feb
3. Water supply and sanitation workshop	B. Fisher	10-16 Oct
4. Workshop on waste disposal management	H. Ogawa	31 Oct - 6 Nov
<b>MALAYSIA</b>		
1. Seminar-workshop on partnerships towards responsive solid waste management in Southeast Asia	H. Ogawa	17-22 Jan
2. Attendance at the seminar on safety management of chemical substances for prevention of industrial pollution	H. Ogawa	22 Feb
3. Water quality disaster management plan (intermittently)	T. Dafoe	8 Apr - 10 Sep
4. Attendance at the course on environmental impact assessment, Sarawak	H. Ogawa	18-26 May
5. Attendance at the course on planning and control of the environment for local authorities	H. Ogawa	15 Jun
6. Attendance at the course on environmental risk assessment and management	H. Ogawa	5-8 Jul

Activity	Carried out by	Date
7. Development of a registration and training system for operators of water and wastewater treatment plants (intermittently)	B. Fisher	22 Jul - 23 Nov
8. Attendance at the course on integrated environmental planning and management	H. Ogawa K. Rolfe	4-8 Oct
9. Intensive course on environmental health for public health engineers, and seminar/workshop on management of hospital waste for key hospital personnel	C.B. Saw H. Ogawa W. Harrington	11-29 Oct
10. Seminar on air quality management study for the Klang Valley Region	K. Rolfe	26-27 Oct
11. National workshop on occupational health	T. Ng W. Harrington	1-5 Nov
12. Presentation on health effects of industrial chemicals at University of Malaya	W. Harrington	30 Dec
<b>MICRONESIA, FEDERATED STATES OF</b>		
1. Hazardous waste survey -pesticide repackaging	W. Harrington	25-29 Sep
<b>PAPUA NEW GUINEA</b>		
1. Hospital waste management	W. Harrington	7 Feb - 21 Mar
<b>PHILIPPINES</b>		
1. Preparation of national priority proposals on site assessment and chemical testing services (funded by UNDP/WHO Project on Safety and Control of Toxic Chemicals and Hazardous Wastes)	W. Harrington	10 Jan - 1 Feb

Activity	Carried out by	Date
2. Symposium and seminar-workshop on safety and management of chemicals and hazardous wastes (funded by UNDP/WHO Project on Safety and Control of Toxic Chemicals and Hazardous Wastes)	H. Ogawa	27 Mar - 3 Apr
3. Preparation of an air quality management master plan (Phase 2) and participation in the World Bank Urban Air Quality Management Workshop	K. Rolfe	20 Jun - 28 Jul
4. National workshop on environmental risk assessment and control technology	H. Ogawa J. Spickett	15-27 Aug
<b>REPUBLIC OF KOREA</b>		
1. Environmental information database management	T. Dafoe L. Murdoch	15-28 Aug
<b>SAMOA</b>		
1. Water supply and sanitation	B. Fisher	20 Sep - 7 Oct
<b>SINGAPORE</b>		
1. Establishment of a chemical safety information centre	T. Kaminuma	14-22 Feb
2. Visit to discuss possible collaborative activities in environmental epidemiology	P. Guo B. Kean	10 Jun
<b>TONGA</b>		
1. Investigation of the potability of the Nuku'alofa water supply contaminated by diesel fuel	T. Dafoe	26 Apr - 6 May

Activity	Carried out by	Date
<b>VANUATU</b>		
1. Hazardous waste survey - pesticide repackaging	W. Harrington	11-18 Sep
<b>VIET NAM</b>		
1. Environmental health programme development	P. Guo	4-10 Feb
2. Courses on food safety and inspection	D. Mahoney	31 Mar - 20 Apr
3. Water supply and sanitation	B. Fisher	31 May - 14 Jun
<b>REGIONAL ACTIVITIES</b>		
1. Preparation of draft regional guidelines for hospital waste management in developing countries	C.B. Saw	13-24 Sep
2. Workshop on environmental health impact assessment, Kuala Lumpur, Malaysia	M. Birley D. Calvert H. Ogawa	15-19 Nov
3. Workshop on drinking water quality monitoring and surveillance for Pacific island countries, Suva, Fiji	B. Fisher B. Lloyd	6-10 Dec
4. Coordination of the UNEP/WHO Global Environmental Monitoring System (GEMS) air quality monitoring project	EHC staff	continually
5. Coordination of the GEMS water quality monitoring project	EHC staff	continually
6. Coordination of the GEMS food contamination monitoring project	EHC staff	continually

Activity	Carried out by	Date
7. Coordination of the GEMS human exposure assessment locations (HEAL) project	EHC staff	continually
8. Environmental information service programme	EHC staff	continually

#### **OTHER ACTIVITIES**

1. Attendance at the ESCAP interagency working group meeting on environment and development, Bangkok, Thailand	P. Guo	1-3 Feb
2. Attendance at the ESCAP/UNDP high-level meeting on environmentally sound and sustainable development in Asia and the Pacific, Kuala Lumpur, Malaysia	K. Rolfe	15-19 Feb
3. Attendance at the UNEP/Japan Society for the Water Environment workshop on human resources development in river water quality management, Kuala Lumpur, Malaysia	T. Dafoe	12-16 Apr
4. Attendance at the training course on water quality for Mekong riparian countries, Bangkok, Thailand	T. Dafoe	9-22 May
5. Attendance at the Second Programme Steering Committee Meeting on the Urban Management Programme for Asia and the Pacific, Kuala Lumpur, Malaysia	H. Ogawa	24-25 Jun
6. Attendance at the bi-regional meeting on urban health development, Manila, Philippines	H. Ogawa	8-16 Aug

Activity	Carried out by	Date
7. Attendance at the Seventh Meeting of the International Programme on Chemical Safety (IPCS) Programme Advisory Committee, Brussels, Belgium	W. Harrington	4-10 Oct
8. Attendance at the WHO interregional consultation on environmental health, Toluca, Mexico	P. Guo	11-16 Oct
9. Attendance at the WHO/UNEP interregional meeting on education and promotion for supportive environments for health, Bangkok, Thailand	K. Rolfe	31 Oct - 6 Nov
10. Attendance at the Senior Expert Meeting on the Mekong water quality monitoring and assessment; and at the Thirty-second session of the interagency task force on water for Asia and the Pacific, Bangkok, Thailand	P. Guo	28 Nov - 2 Dec

## ANNEX 3

### SHORT-TERM CONSULTANTS - 1993

M.H. Birley  
Senior Lecturer  
University of Liverpool  
United Kingdom

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Professor of Public Health  
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J. Spickett  
Professor and Head  
Centre for Advanced Studies in  
Health Sciences Curtin University  
Perth Western Australia

**LIST OF TECHNICAL DOCUMENTS ISSUED IN 1993**

- 1. Papers presented at WHO workshop on environmental health impact assessment:**
  - Overview of health impact assessment in environmental impact assessment
  - Health impact assessment of hydropower and irrigation development projects
  - Methods for environmental and health impact assessment of development projects
  - Guidelines for the preparation of a national framework for promotion of health impact assessment in environmental impact assessment
  
- 2. Papers presented at WHO workshop on drinking water quality monitoring and surveillance for Pacific island countries:**
  - Aspects of field testing of water supplies
  - Sampling frequency and procedures
  - Chemical impurities in drinking water
  - Cholera control
  - Water monitoring laboratory operating budget projections
  - Monitoring and surveillance of rural water supplies - appropriate technology
  - Drinking water quality in rural areas
  - Water supply evaluation report of spring water
  - Water supply evaluation report of surface water
  - Water surveillance and improvement programme