

**WORLD HEALTH ORGANIZATION
WESTERN PACIFIC REGIONAL CENTRE FOR THE
PROMOTION OF ENVIRONMENTAL PLANNING
AND APPLIED STUDIES**

(PEPAS)



SUMMARY OF 1988 ACTIVITIES

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**World Health Organization
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1. INTRODUCTION

Established in 1979, the WHO Western Pacific Regional Centre for the Promotion of Environmental Planning and Applied Studies (PEPAS) 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. During 1988, the Centre continued to carry out activities in the four principal programme areas related to the promotion of environmental health: community water supply and sanitation; environmental health in rural and urban development and housing; control of environmental health hazards; and food safety. The Centre successfully collaborated with Member States in conducting national and regional training courses and workshops to promote the education and training of environmental health manpower and provided technical cooperation services to promote the development of national environmental health policies and planning capabilities in Member States. It also continued to promote information exchange and cooperation among national institutions and WHO collaborating centres in environmental health in the Region. The collaborating centres are part of an international network designed to perform activities in support of WHO's environmental health programmes.

2. PEPAS STAFF

The Centre is staffed with a total of 15 personnel in various capacities. Annex 1 lists the staff of the Centre.

3. HIGHLIGHTS OF ACTIVITIES UNDERTAKEN

During the year, the Centre collaborated with national agencies, research/training institutions and local governments in sixteen countries or areas of the Region in conducting various activities in the field of environmental health. These activities were implemented by staff members and/or consultants. A list of the activities is given in Annex 2 and a list of consultants who served during 1988 is given in Annex 3.

3.1 Community water supply and sanitation

Advisory services were provided to Kiribati on remedial measures to combat serious fly problems in Christmas Island. Proposals were made for construction of individual pour flush latrines. Various other sanitation improvements were also proposed. Other advisory services provided by PEPAS staff included technical aspects of rural water supplies and sanitation in Laos and Viet Nam. Designs using appropriate technology for groundwater development were proposed. In the Federated States of Micronesia, a PEPAS consultant conducted a workshop to train participants in appropriate drinking water and coastal water monitoring programmes for small island communities, use of appropriate water quality guidelines, and appropriate monitoring programmes for food sanitation of locally processed fish and shellfish.

Two Technical Service Agreements (TSA) were finalized with the Ministry of Health in Viet Nam. The first covers an evaluation of two types of handpumps for shallow wells, namely Blair and Solomon Island Handpumps, which would be suitable for many areas of Viet Nam. Thirty-six of each type were supplied for installation in rural areas. The second TSA is for the construction of a gravity water scheme for two villages in Mai Chau. This water supply scheme was designed by PEPAS and will be constructed under the auspices of the Ministry of Health. The scheme will be a pilot project and will provide future guidance on design details, community participation, health education, institutional development and other aspects. A report will be prepared at the end of the project. Construction of the scheme commenced in November 1988.

Preliminary arrangements were initiated for the holding of a Water Supply and Sanitation Consultative Meeting of Pacific Island countries in 1989. During the year, a staff member participated in a Decade Consultative Meeting held in the Philippines. Such meetings provide a forum for discussion between donor countries and recipients regarding potential projects in the field of water supply and sanitation.

In support of WHO's role of monitoring progress made by countries during the International Drinking Water Supply and Sanitation Decade, the status of several countries in the Region with respect to their national water supply and sanitation programmes was summarized during various field visits. A full regional summary will be carried out in 1989.

3.2 Environmental health in rural and urban development and housing

Programme activities in this area covered environmental planning, environmental impact assessment (EIA), and solid waste management.

A staff member participated in two technical meetings on environmental management and planning: the national workshop on economic-cum-environmental planning held in Malaysia; and the first Korea-Japan environmental science and technology symposium convened in Seoul.

A technical collaborative activity to develop training programmes and course modules for the Malaysian EIA was completed, and a follow-up action to conduct a training course on EIA was initiated. Preparations were made during the year to form a regional information exchange network on EIA with special emphasis on environmental health impact assessment.

In the field of solid waste management, a staff member collaborated with the Government of Papua New Guinea in the first national workshop on solid waste management, and participated in two intercountry meetings: the international expert group seminar on improving solid waste management in the context of metropolitan development and management in Asian countries, organized by the United Nations Centre for Regional Development and held in Beijing; and the Malaysia-Japan meeting on industrial-municipal solid waste management convened in Kuala Lumpur. A research project on improvement of environmental health, particularly in the area of solid waste management in selected new villages in Malaysia has also been initiated.

3.3 Control of environmental health hazards

3.3.1 Air quality management

The Air Quality Management Adviser visited Australia to provide an overview of the air quality management practices in the various States and Territories. Four State capital cities and Canberra were visited and discussions were held with the air pollution control authorities. A report was prepared suggesting the adoption of a national air quality management policy to provide a uniform basis for State and Territorial air pollution control programmes. This policy incorporates the concept of controlling human exposures to pollutants as opposed to controlling only the ambient air concentrations.

In China, a review of air quality management programmes in four areas of China with significantly different problems (Chongqing, Beijing, Shenyang, Shanghai) was carried out. Air quality monitoring networks and air pollution control strategies were discussed and quality assurance aspects of data collections were reviewed. A report was written suggesting reordering of some priorities and integration of separate monitoring networks operated by the National Environmental Protection Agency and the Ministry of Public Health.

The City of Shenyang was evaluated as a suitable site for a WHO/World Bank study of air pollution control strategies. Sources of all possible data on ambient air quality, meteorology, emission inventories, health studies and air quality models were reviewed and a report was written on the suitability of the site.

Discussions were held with the Institute of Environmental Health and Engineering (IEHE) of the Chinese Academy of Preventive Medicine (CAPM) on the problem of endemic fluorosis in 12 provinces of China due to fluoride contamination of food from unvented indoor coal combustion. Two research proposals for control of fluoride emissions and mitigation of fluoride exposures were prepared, in collaboration with relevant officials in China, for submission to international agencies for funding consideration.

A lecture on air quality indices was presented at IEHE/CAPM, and discussions were held on the design of air quality indices appropriate for conditions in China.

In Japan, a staff member met officials of the World Federation of Building Service Contractors (WFBSC) to discuss a possible collaborative study on indoor air quality in buildings serviced by member firms of the WFBSC. A draft proposal outline has been prepared in collaboration with the National Institute of Public Health, Tokyo, for a survey of air quality in buildings which have no history of sick building syndrome complaints. This survey will serve to provide a control data base for comparison against air quality in buildings where complaints surface.

The air quality monitoring network in Malaysia was reviewed and specific recommendations were made for changes in monitoring practices, and for the development of quality assurance. A presentation was made to relevant staff of the Department of Environment on organization of activities to improve their present air quality management practices. An applied study on quality assurance in air monitoring is being implemented in collaboration with the University of Technology, Malaysia. The study will provide information to PEPAS on quality assurance of the data on total suspended particulate measurements being provided by countries participating in the Global Environmental Monitoring System (GEMS) air quality monitoring project.

In Papua New Guinea, the suitability of performing an epidemiological study of the relationship between acute respiratory infections in children and their exposure to wood smoke from unvented cooking/heating fires was discussed. A report was prepared which calls for further investigation to find appropriate exposure categories and a proper control group for the study.

3.3.2 Water quality management

A national course on training of trainers in water supply projects, sponsored by the German Agency for Technical Cooperation (GTZ), was held in Chengdu, China, from 21 March to 16 April 1988. A PEPAS staff member assisted in the conduct of the course.

China has in recent years become increasingly aware of the threat of groundwater pollution. Noting the lack of expertise in the field of groundwater pollution control, the Chinese Research Academy of Environmental Sciences requested PEPAS to conduct a two-week training course on the subject in Beijing on 5-18 November 1988. Particular emphasis was given to latest technologies and approaches on the monitoring of groundwater, the impact of groundwater pollution on human health, methods and procedures for assessing that impact, methods for preventing and controlling groundwater pollution and for setting up groundwater protection zones under various hydrogeological conditions, and the technology for treating polluted groundwater for human consumption.

PEPAS provided funds to the Ministry of Public Health in China to carry out a study on health assessment of nightsoil and wastewater reuse. The study will investigate the impact of the use of nightsoil/wastewater for agriculture and aquaculture on public health, and determine the measures which can minimize the impact. Four study sites were selected where sampling for microbiological tests will be conducted on vegetables, crops, aquatic plants, fishes, water, land and nightsoil. PEPAS also collaborated with the same Ministry by providing local costs amounting to US\$5000 to conduct a workshop on sanitary monitoring of discharges from biogas tanks, which was held in Chengdu.

In Malaysia, PEPAS provided advisory services to the Standards and Industrial Research Institute of Malaysia (SIRIM) on the development of modular treatment plants for the treatment of wastewater discharged from small and medium size industrial establishments.

In Papua New Guinea, a two-month assignment was carried out in early 1988 on water resources management planning. An appraisal of water pollution problems was made on four study areas, and recommendations were made on appropriate methods and procedures to implement regional water resources management plans.

In Vanuatu, PEPAS collaborated with the Government to survey and select sites for marine outfalls for sewage disposal in Port Vila.

A staff member attended and contributed to the GTZ-sponsored seminar on anaerobic waste treatment and sanitation techniques held at the Asian Institute of Technology, Bangkok, in September 1988.

3.3.3 Toxic and hazardous substances management

In the field of toxic chemicals and hazardous waste management, advisory services were provided to the Solomon Islands regarding environmental mercury contamination from gold mining operations, and to the Federated States of Micronesia on development of a national hazardous substance spills response mechanism. Evaluation of on-site contamination from uncontrolled dumping of toxic materials was also undertaken for the latter Member State.

A visit at the invitation of the Kingdom of Tonga to provide collaborative inputs on integration of hazardous substance management into the health legislation as a component of primary health care was undertaken.

Technical visits were made to China and Papua New Guinea to collaborate in developing future cooperative programmes with these countries in chemical safety management.

The ongoing programme of toxic and hazardous substances management in Malaysia was extended to include development of chemical emergency contingency planning at State and District levels. The draft proposed strategy for control of importation of highly toxic substances is receiving government consideration.

Guidelines for the management of clinical wastes are being developed in cooperation with the Ministry of Health in Malaysia. A questionnaire for examining the present status of hospital waste management is being finalized for national distribution.

Technical inputs were provided to inter regional and regional activities: a regional training course on hazardous waste landfills, organized by the United Nations Environment Programme (UNEP) and the German Association for Advanced Professional Training (CDG) in Kuala Lumpur and a meeting on international risk management perspectives of industrial wastes organized by the Asian Productivity Organization and CDG in New Delhi. Seminars and symposia presentations were given in Malaysia on toxicology and laboratory safety, and in China on chemical etiology of endemic diseases.

Internationally, PEPAS continues its active participation in the programmes of the UNEP/ILO/WHO jointly sponsored International Programme on Chemical Safety and the UNEP International Register of Potentially Toxic Chemicals.

3.3.4 Noise control

An updated document on noise control legislation and policy in the Western Pacific Region was prepared and distributed to Member States.

3.3.5 Environmental epidemiology

A regional training course on environmental epidemiology was held in Kuala Lumpur on 14-19 November 1988. Participants, mainly epidemiologists, from 13 Member States in the Region attended the course. The course was designed to train trainers in the development and implementation of appropriate methodologies for conducting epidemiological studies, and in epidemiological evaluation of the health effects of environmental health hazards. Topics discussed included case control studies, longitudinal cohort studies and statistical design concepts. The participants were given a course outline and teaching materials suitable for holding a similar course at a national level. Copies of the course materials are available on request from PEPAS.

3.4 Food safety

In Brunei, a general evaluation of the food safety infrastructure was carried out and a feasible course of action to develop an effective food control system was recommended. A draft food law was prepared for consideration by the government.

A staff member visited Beijing and Shaanxi and Guangdong Provinces in China to coordinate WHO projects in the food safety area. The visit to Beijing focused on preparations for a food safety training course to be held in 1989 and on development of a proposal to improve street foods in China for submission to UNDP. The visits to Shaanxi and Guangdong Provinces were intended to review the food safety components of primary health care (PHC) projects recently approved by WHO and the Government. In addition, discussions were held on the prevention and control of excessive residues of pesticides in food in Guangdong Province and a draft proposal prepared.

One of the reasons for the establishment of PEPAS was the ready availability of technical expertise to address urgent problems in environmental health. In this context, a staff member responded to an ad hoc request for cooperation to review the safety of shellfish in Fiji from

19 to 28 September 1988. The visit helped to dispel concerns that consumption of shellfish harvested from the Rewa River posed an imminent health hazard. A proposal for further collaboration in this area was welcomed by health officials.

In collaboration with the Manager of the Food Safety Unit in WHO Headquarters, Geneva, a staff member developed an approach for the integration of food safety into primary health care delivery systems. A visit was made to Tonga from 28 September to 3 October 1988 to discuss the establishment of a pilot programme to evaluate the usefulness of the approach in improving food handling practices in the home.

A staff member visited Papua New Guinea to conduct a food safety workshop for provincial health inspectors. The staff member provided comments on the proposed food safety legislation and policies and led the group in the process of planning and evaluating provincial food safety programmes. Further collaboration with PEPAS in the food safety area was also discussed.

In the Philippines, cooperation was provided to develop priorities for analytical surveillance and to draft regulations covering alcoholic beverages. At the request of the Government, draft food standards for vinegar and artificial vinegar were also prepared.

In October 1988, a mass poisoning incident occurred in Malaysia which eventually led to the deaths of 13 children and one adult. At the urgent request of the Ministry of Health, two consultants from the U.S. Center for Disease Control were provided by PEPAS to assist the Special Task Force formed by the Ministry to identify the cause of the poisonings. In addition, several requests for information were handled.

PEPAS provided a consultant to the Federated States of Micronesia to provide lectures on the hazards posed by the microbiological contamination of food and on basic methods for preventing and controlling such contamination.

A food safety mailing list has been developed and several WHO documents have been distributed. Continued efforts were made to establish an informal food safety information exchange network. A food safety videotape library has been established and a compilation of holdings was prepared and sent to all food safety authorities on the PEPAS mailing list.

Final review and editing of the document "Food Safety Services in the WHO Western Pacific Region" has been completed and the document is being published by PEPAS for distribution within and outside the Region.

Food safety country profiles for the Lao People's Democratic Republic, Brunei, Fiji and Papua New Guinea have been prepared using the WHO recommended format given in the publication, "Guiding Principles on Evaluation of Programmes to Ensure Food Safety".

In the field of food safety research, a number of proposals were developed for consideration for funding in the food safety area. A proposal to develop an expert system for the diagnosis and reporting of foodborne diseases has been approved and a contractual services agreement has been issued. The project is scheduled to be completed in late 1989. Another proposal for the development of a field test kit for common food contaminants and adulterants was supported in the amount of US\$30,000. Efforts were made to identify a suitable investigator to perform contractual services. In Fiji, a proposal for a study of the contamination of shellfish in the Rewa River was developed.

A staff member attended the Sixth Session of the Codex Coordinating Committee for Asia which was held in Denpasar, Indonesia from 26 January to 1 February 1988, and presented a paper on food safety activities in the WHO Western Pacific Region.

PEPAS maintains strong linkages with other international and bilateral agencies with interests in the food safety area as well as with the food safety units at WHO Headquarters and other WHO Regional Offices. A staff member visited the WHO Regional Office for the Americas to discuss the progress in implementing their food protection action plan, and the U.S. Food and Drug Administration to promote collaboration and cooperation in food safety in the Western Pacific. Discussions were held with the Chief of the Food Quality and Standards Service of the Food and Agriculture Organization of the United Nations concerning improved cooperation and coordination. PEPAS continues to have an ongoing dialogue with the Intergovernmental Organization for Fishery Products (INFOFISH) and the Malaysian Agricultural Research and Development Institute (MARDI), both of which are located in Kuala Lumpur.

4. GLOBAL ENVIRONMENTAL MONITORING SYSTEM (GEMS) PROJECTS

National agencies continued to contribute data to the ongoing UNEP/WHO GEMS projects on air quality monitoring, water quality monitoring and food contamination monitoring. Global assessment reports on air and water quality and on food contamination were produced by UNEP/WHO in 1988 and presented at a meeting of UNEP/WHO Government Experts on Health-Related Environmental Monitoring held in Geneva in September. A GEMS/water data summary report for 1985-1987 was prepared by the Canada Centre for Inland Waters which serves as the WHO Collaborating Centre responsible for global data processing of the GEMS/water data.

PEPAS continued to provide ongoing review of the GEMS Human Exposure Assessment Location (HEAL) project.

5. COLLABORATION WITH INTERNATIONAL AND BILATERAL AGENCIES

PEPAS continued to maintain its working relationships with other international and bilateral agencies involved in environmental health activities, e.g. German Agency for Technical Cooperation (GTZ), International Reference Centre for Community Water Supply and Sanitation (IRC), United Nations Environment Programme (UNEP), South Pacific Regional Environmental Programme (SPREP), Food and Agriculture Organization of the United Nations (FAO), United Nations Children's Fund (UNICEF), Asian Institute of Technology (AIT), Economic and Social Commission for Asia and the Pacific (ESCAP), Asian Development Bank (ADB), World Bank, International Development Research Centre of Canada (IDRC), United Nations Development Programme (UNDP) and the Danish Agency for International Development (DANIDA). DANIDA funds will be provided for two collaborative activities in 1989.

6. INFORMATION SERVICES

In fulfilling its role as a regional information centre in the field of environmental health sciences and sanitary engineering, PEPAS continued to provide technical information services in response to requests, and to distribute environmental health publications and documents issued by WHO. During the year, PEPAS provided information services to more than 400 individuals and agencies involved in the field of environmental health.

As part of the Centre's regional information services programme, a new project on a regional information network on environmental impact assessment with special emphasis on environmental health impact assessment was started. The feasibility and viability of this type of activity will be evaluated in 1989.

A system was set up for on-line access to international data bases to provide for more timely access to comprehensive environmental health information requested by Member States.

During the year, about 80 visitors came to the Centre. They were briefed on the functions and activities of PEPAS and, at the same time, information was exchanged on issues of mutual interest. In addition, two groups of postgraduate students from various countries with interest in environmental health disciplines visited PEPAS to familiarize themselves with the activities of the Centre.

7. PEPAS REPORTS AND DOCUMENTS

A comprehensive list of technical documents and reports produced by PEPAS during 1988 is available on request.

PEPAS STAFF

Mr Somnuek Unakul* Director

Technical staff

Dr K. Bentley	Chemical Safety Adviser
Mr B. Fisher	Decade Engineer
Dr P. Guo	Acting Director/ Water Quality Management Adviser
Dr D. Mage	Air Quality Management Adviser
Dr G. Moy	Food Safety Adviser
Dr H. Ogawa	Environmental Systems Engineer

Administrative staff

Mr S.P. Sardana	Administrative Officer
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Programme support staff

Ms Y.M. Tan	Special Assistant
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Ms Normah Mahmud
Ms M.R. Tan
Ms L.M. Lai
Ms M. Pieris

Drivers

Mr Shahrudin Asmuni
Mr Masim Satarum

* On extended sick leave

TECHNICAL COOPERATION ACTIVITIES AND FIELD VISITS DURING 1988

Activity	Carried out by	Date
<u>AUSTRALIA</u>		
1. Advisory services on air quality management, CDCSH	D. Mage	10-29 October
<u>BRUNEI DARUSSALAM</u>		
1. Field visit to review food safety programme, MOH	G. Moy	27 June-15 July
<u>CHINA</u>		
1. Participation in a GTZ-sponsored training course on training of trainers in water supply projects, Chengdu, NPHCC	P. Guo	29 March-3 April
2. Advisory services on air quality management, NEPA	D. Mage	3 July - 5 August
3. Field visit to discuss collaborative activities in solid waste management, CRAES	H. Ogawa	4-17 September
4. Participation in a UNCRD-sponsored International Expert Group Seminar on improving solid waste management in the context of metropolitan development and management in Asian countries, Beijing	H. Ogawa	5-9 September

Activity	Carried out by	Date
5. Field visit to Beijing, Shaanxi and Guangdong Provinces to discuss various subjects related to food safety activities, MOPH	G. Moy	25 July-7 August
6. Conduct of a seminar on air pollution dispersion modelling, BMRIEP	A. Doury & P. Manins	17-21 October
7. Field visit to participate in a symposium on environmental life elements and health, and to discuss collaborative activities in chemical safety management	K. Bentley	24 October-16 November
8. Conduct of a training course in groundwater pollution & control, CRAES	E. Cooper & F. Zaletel	5-18 November

FIJI

1. Field visit to assess the food situation in regard to shellfish harvested from the Rewa River, MOH	G. Moy	21-28 September
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JAPAN

1. Field visit to review the GEMS HEAL project and to discuss with the World Federation of Building Service Contractors (WFBSC) on subjects of common interest	D. Mage	25-30 January
2. Field visit to discuss with the Institute of Public Health and WFBSC on the feasibility of a joint study of air quality in modern office buildings	D. Mage	1-3 July

Activity	Carried out by	Date
<u>KIRIBATI</u>		
1. Advisory services on sanitation in Christmas Island, MOHFP	B. Fisher	9-16 March
<u>LAOS</u>		
1. Field visit to review implementation of community water supply and sanitation programmes and to discuss collaboration on a rural latrine construction programme, DWSS	B. Fisher	5-16 June
<u>MALAYSIA</u>		
1. Participation in a UNEP/CDG-sponsored training course on hazardous waste landfills, DOE	K. Bentley & H. Ogawa	7-11 June
2. Participation in a workshop on economic-cum-environmental planning, INTAN/DOE/ADB	H. Ogawa	22-25 August
3. Participation in a training course on sanitary survey of water supply systems, MOH/PWD	P. Guo	5-17 September
4. Advisory services on development of modular wastewater treatment plants, SIRIM	P. Guo	Intermittent input
5. Advisory services on development of an environmental impact assessment training programme, DOE	H. Ogawa	Intermittent input
6. Advisory services on chemical safety management, DOE	K. Bentley	Intermittent input

Activity	Carried out by	Date
7. Advisory services on air quality management, DOE	D. Mage	Intermittent input
8. Advisory services on environmental health in urban settlements, MNRD	H. Ogawa	Intermittent input
9. Advisory services on development of guidelines for hospital waste disposal, MOH	K. Bentley	Intermittent input

MICRONESIA, FEDERATED STATES OF

1. Conduct of a workshop on water quality management and food sanitation, DHR	H.J. Bavor	15 May-9 June
2. Advisory services on hazardous materials survey, hazardous spills response plan and testing of leachate from solid waste dumps, DHR	K. Bentley	17-24 September

PAPUA NEW GUINEA

1. Advisory services on water resources management planning, BWR	P. Guo	14 January-12 March
2. Conduct of a workshop on solid waste management, DOH	N.Y. Kirov & H. Ogawa	24-28 April
3. Design of a study on effects of indoor air pollution on acute respiratory infections (in conjunction with participation in a national workshop on acute respiratory infections), DOH	D. Mage	17-28 September

Activity	Carried out by	Date
4. Field visit to discuss collaborative activities in chemical safety management, DOH	K. Bentley	2-5 October
5. Review of food safety programme and conduct of food safety workshop for provincial health inspectors, DOH	G. Moy	8-19 October
<u>PHILIPPINES</u>		
1. Advisory services on assessment of programme for ensuring the safety of food, including alcoholic beverages, BFAD	G. Moy	20 November-3 December
<u>SOLOMON ISLANDS</u>		
1. Advisory services on mercury contamination of the environment, MNR	K. Bentley	21-27 January
<u>SINGAPORE</u>		
1. Field visit to discuss technical collaboration in chemical safety management activities with various government agencies	K. Bentley	4-6 May and 7-8 July
<u>TONGA</u>		
1. Field visit to review toxic waste management, MOH	K. Bentley	26-30 September
2. Field visit to discuss and develop a pilot programme for the integration of food safety into the primary health care delivery systems, MOH	G. Moy	28 September-3 October

Activity	Carried out by	Date
<u>VANUATU</u>		
1. Advisory services on Port Vila sewerage planning, NPSO	I. Wallis	26 July-16 August
<u>VIET NAM</u>		
1. Field visit to collaborate on design and construction of Mai Chau water supply project and a pilot project on handpumps in Hanoi and Nghe Tinh, MOH	B. Fisher	16-30 November
<u>MISCELLANEOUS</u>		
1. Participation in sixth session of Codex Coordinating Committee for Asia, Denpasar, Indonesia	G. Moy	23 January-1 February
2. Participation in second WHO informal meeting on risk and health impact assessment, Geneva	H. Ogawa	24-25 March
3. Participation in a seminar on anaerobic waste treatment and sanitation techniques, Bangkok	P. Guo	31 August-4 September
4. Participation in first Korea-Japan environmental science and technology symposium, Seoul	H. Ogawa	22-24 November
5. Participation in a meeting on risk management in relation to the treatment of hazardous waste, New Delhi	K. Bentley	23 November-3 December
6. Participation in a regional conference on development, the environment and health, Amman	P. Guo	10-14 December

REGIONAL

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| 1. Field visit to various Pacific island countries to monitor progress of water supply and sanitation activities in relation to the Water Decade | B. Fisher | 20 February-31 March |
| 2. Regional training course on environmental epidemiology | T. Kjellstrom
D. Mage,
T. Okubo &
L. Punnett | 14-19
November |
| 3. Coordination of the Global Environmental Monitoring System (GEMS) air quality monitoring project | PEPAS staff | Continually |
| 4. Coordination of the GEMS water quality monitoring project | PEPAS staff | Continually |
| 5. Coordination of the GEMS food contamination monitoring project | PEPAS staff | Continually |
| 6. Coordination of the GEMS human exposure assessment location (HEAL) project | PEPAS staff | Continually |
| 7. Environmental information service programme | PEPAS staff | Continually |

Abbreviations used:

ADB	Asian Development Bank
BFAD	Bureau of Food and Drugs
BWR	Bureau of Water Resources
BMRIEP	Beijing Municipal Research Institute of Environmental Protection
CDCSH	Commonwealth Department of Community Services and Health
CRAES	Chinese Research Academy of Environmental Sciences
DHR	Department of Human Resources
DOE	Department of Environment
DOH	Department of Health
DWSS	Directorate of Water Supply and Sanitation
INTAN	National Institute of Public Administration
MNR	Ministry of Natural Resources
MNRD	Ministry of National and Rural Development
MOH	Ministry of Health
MOHFP	Ministry of Health and Family Planning
MOPH	Ministry of Public Health
NEPA	National Environmental Protection Agency
NPHCC	National Patriotic Health Campaign Committee
NPSO	National Planning and Statistics Office
PWD	Public Works Department
SIRIM	Standards and Industrial Research Institute of Malaysia

**SHORT-TERM CONSULTANTS
1988**

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