

March 2002

**WORKSHOPS ON
WATER QUALITY SURVEILLANCE AND SAFETY
FIJI ISLANDS
September & November 2001**

Prepared by

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WATER QUALITY SURVEILLANCE WHO – WESTERN PACIFIC REGIONAL OFFICE (WPRO)

Sam Godfrey
Water, Engineering and Development Centre (WEDC), UK

Date: 6th September 2001
Venue: Tradewinds, Lami, Fiji

Workshop Agenda:

Session 1: Introduction

Break 10:20 – 10:50

Session 2: Implementation

Session 3: Parameters & Tests

Lunch 12:30 – 1:30

Session 4: Water Sources

Session 5: Communication

Break 3:10 – 3:30

Session 6: Surveillance – Technical

Session 7: Surveillance – Hygiene

Objectives:

Review of the major drinking water quality issues; current monitoring capacities and available resources for drinking water quality monitoring in Fiji.

Outcome: (Key findings)

- Independent water quality surveillance – There is a lack of an independent surveillance body
- Limited water quality monitoring in ‘high’ risk areas
- Variable Access Data
- Promotion of rainwater
- Data analysis and reporting
- There is no official discussion forum existing in Fiji. Water quality data is not being linked to health data. Primary stakeholders (consumers and communities) do not have access to results and are unaware of the quality of the water they are consuming.

- Microbiological and Chemical Parameters – Major contaminant of drinking water is microbial contamination.
- Chemical contaminants such as nitrates and pesticides are possible pollutants, though there is insufficient available data.
- Sanitary inspections – There is little or no use of sanitary inspections or sanitary surveys in Fiji.
- Legislation – The Public Health Act is outdated.
- Human Resources – Role of health inspectors are unclear in the area of water quality surveillance due to unclear terms of reference and direction and lack of resources.

WORKSHOP ON FIELD TESTING PROTOCOL ON USE OF CHEMICALS IN DRINKING WATER

Philip A. Kingston
Principal Technical Officer
Information Technology and Data Management

Date: 19th – 20th September 2001

Venue: Holiday Inn, Suva, Fiji

Objectives:

Chemical Safety of Drinking Water

The protocol is to guide developing countries to determine which chemicals may be considered as priorities for the purpose of developing risk management strategies, including standard setting and monitoring. Assessment of chemical contaminants to enable decision making on new water sources, and strategies for monitoring sources, treatment and distribution systems. This is useful for a person responsible for assessing the monitoring requirements of new and existing drinking water supplies for protecting human health.

Outcomes:

- Fiji has no national drinking water standard and little monitoring of water supplies is carried out. There is little or no collaboration between agencies at present.
- Chemical contamination of drinking water is mainly due to mining, agricultural activities and the sugar industry.
- A trial should be conducted at sites where there was a concern about contamination of supplies, particularly mining.
- There is little capacity for water quality monitoring, resources are scarce, and training support is low.

Examples of mining industry in Fiji:

Gold Mines in Fiji

Mt Kasi and Vatukoula – Gold

Monitoring effluent:

Cyanide – thiocyanate – settlement tanks (biodegradable degradation) – discharged to river.

Copper mines

Navatu, Viti Levu

Tavua water system – has upstream/downstream pumps.

Discharges from gold, timber and sugar cane industries

Field Trip to Waila Treatment Plant, Suva

The main water source for this plant comes from the Waimanu River.

The plant currently runs on 3 submersible pumps and the fourth is on standby. For emergency, a fifth pump is currently being added.

Raw water flows through an inlet chamber into a clarifier. Aluminium sulphate is added for pH correction and coagulation and copper sulphate for algal growth.

After chemical treatment solid settles in clarifier tanks.

The output for this treatment plant is 60 – 90 ML/day, supplying Suva, Nausori and Rewa delta areas. This is the largest water-treatment plant in Suva usually running at its maximum capacity to cater for the large population. The Tamavua water-supply treatment plant has an output of 45ML/day.

After coagulation in clarifier tanks, water is filtered through rapid sand filters made of sand and gravel. Filters are cleaned by backwashing or reverse flow every 72hrs/2m Headloss.

Filtered water goes into tanks called clear water-wells where chlorine in the form of lime or soda and fluoride are added. Chlorine is for pH correction. At the time of the field trip we were told that fluoride has not been added into the water supply for the last few months as the chemical has been out of stock.

Chemical analysis:

PH = 6.8 – 8.4

Turbidity = <1NTU

Chlorine residual = 1 or 1.5 mg/L

Endpoints (tap) chlorine residual = 0.5mg/L

Recommendations:

The host agency (WHO) in collaboration with national (MoH) and external partner agencies should prepare a plan to apply the protocol at a suitable site to prioritise chemicals likely to be found in the drinking water source/supply for the purposes of monitoring to ensure safe water.

The protocol should be used to encourage greater cross-agency collaboration.

From the trial, a priority list of parameters needing to be monitored should be produced, so that the appropriate resources and agencies are utilized to ensure that safe water remains available in sufficient quantities.

Based on the results of the trials, Fiji should formulate her national drinking water quality standards.

WORKSHOP ON DRINKING WATER QUALITY SURVEILLANCE AND SAFETY

Date: 29th October – 1st November 2001

Venue: Mocambo, Nadi, Fiji

Objectives:

Review progress by countries in developing safe water supplies consistent with 1993 GDWQ.

Assess the practicality of the 1993 GDWQ and the associated implementation mechanisms in protecting public health.

Prepare a framework for developing national action plans for overcoming constraints to implementing the 1993 GDWQ; and provide recommendations for:

- Development of a practical protocol to guide countries in deciding what chemical contaminants and health and aesthetic parameters are to be monitored on a priority basis;
- Consideration in the on-going review and updating of the 1993 GDWQ by meetings of global experts; and
- The review and updating of the drinking water quality monographs on arsenic, fluorides, and nitrates.

Conclusions:

From the proceedings of the workshop the following conclusions were made:

- Major concerns were safe groundwater extraction, bacterial contamination, and seawater intrusion.
- There is a lack of public awareness and information on the importance of water quality.
- Drinking water quality is affected by natural, man – made disasters, disease outbreaks and natural emergencies.
- Countries with scarce water supply turn towards desalination plants.
- Only a few countries have legislation on water quality.
- There is a lack of political will in support of water quality monitoring and control programmes.
- There is inadequate technical and financial capacity on laboratory and analytical aspects of water quality monitoring.
- There is a lack of collaboration among water and health agencies.
- Currently the practice is to use the WHO guidelines with little awareness and application of risk management principles.
- There is a lack of interaction and sharing of information among the countries.

Recommendations:

1. Protection of water sources such as springs, rivers, groundwater and rainwater catchments from contamination must be a priority.
2. Technical staff should be trained in social marketing and community mobilization skills to better communicate water quality and other environmental health concerns.
3. A national water quality committee should be formed to include water, stakeholders, and other relevant agencies for monitoring and surveillance.
4. As part of emergency preparedness, proper attention should be given to water quality.
5. Based on the country situation, minimum parameters of water quality should be established if there are limited resources.
6. Water quality concerns along with personal hygiene should be made part of the Healthy Islands initiatives.
7. Training and information on water-quality monitoring, surveillance and control should be available to all who need it for public health purposes.
8. National drinking water quality guidelines (standards) should be dynamic and implemented in stages as necessary.
9. Appropriate simple field-testing kits should be adopted for monitoring water quality especially in rural areas.
10. An implementation manual or shorter version of the new WHO Drinking Water Quality Guidelines should be encouraged and the following framework for regional cooperation established under the auspices of WHO/WPRO:
 - Laboratory/analytical/quality control/assurance (Focal country/agency – Australia, New Zealand)
 - Information exchange/appropriate testing/training (Focal country/agency – PWA, SOPAC)
 - Legislation/standards setting/regulations (Focal country/agency – Australia, New Zealand)
 - Development of risk management and associated implementing guideline (Focal country/agency – Australia, New Zealand, SOPAC)
11. Cooperation between member countries in the Region on specific activities should be pursued with the support of external agencies.

FOLLOW UP

Maintenance and development of the network started at the workshop should be encouraged. SOPAC will take the initiative to start a network between regional water and relevant agencies involved in water-quality monitoring and surveillance. This will include information exchange, dissemination and appropriate testing and training.

Disaster Management Unit, SOPAC, will follow up on development of risk management and associated implementing guideline.

Data Management

Presentation of data management included a demonstration of the Water Quality Database that was designed specifically for water-quality monitoring.

Interest was raised and the following countries made requests:

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APPENDICES

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REGIONAL OFFICE FOR THE WESTERN PACIFIC
BUREAU REGIONAL DU PACIFIQUE OCCIDENTAL

WORKSHOP ON DRINKING
WATER QUALITY SURVEILLANCE
AND SAFETY

WPR/ICP/HSE(2)/2001.1.b

24 October 2001

Nadi, Fiji
29 October – 1 November 2001

TIMETABLE

ENGLISH ONLY

Time	29 October – Monday	Time	30 October – Tuesday	Time	31 October - Wednesday	Time	1 November - Thursday
0800	Registration						
0830	1. Opening ceremony	0830	- Summary of country reports including survey results for the South Pacific	0830	9. Summary of Day 2	0830	- Summary of Day 3
0900	2. Introduction to the workshop objectives and expectations			0900	-Presentation of group discussions	0900	12. Presentation on Capacity Building and Human Resources Management
0945	- Administrative briefing and group photograph	0930	5. Presentation of WHO Guidelines for DWQ (section-by-section)	0930	-Plenary on issues raised on surveillance and management		
1000	Tea/Coffee break	1000	Tea/coffee break	1000	Tea/coffee break	1000	Tea/coffee break
1030	3. Presentation of country reports by participants from: American Samoa; Australia; Cook Islands; Federated States of Mirconesia; French Polynesia; Guam; Kiribati; Marshall Islands	1030	Continuation of presentation of WHO Guidelines for DWQ including plenary Q&A and discussion	1030	10. Introduction – formulation of a framework for Plan of Action development for Pacific Island Countries	1030	13. Presentation on tools: community based management – participatory approaches
				1100	-Group discussion	1100	Panel discussion: Lessons learnt and next steps
1200	LUNCH	1200	LUNCH	1200	LUNCH	1230	LUNCH
1330	(Cont'n) Presentation of country reports by participants from: New Caledonia; New Zealand; Northern Mariana Islands; Palau; Papua New Guinea; Solomon Islands; Tuvalu; Vanuatu	1330	6. review and updating GDWQ - Chemical protocol - Bacteriological issues - Protection and control	1330	Group discussion continued – formulation of the framework for regional action plan and country action plans	1330	14. Wrap-up and Closing
		1430	7. Presentation: Planning and implementation of DWQ surveillance, Quality Assurance and Quality Control				<i>Extended till 5:50 pm. Discussion of conclusions and recommendations.</i>
1500	Tea/coffee break	1500	Tea/coffee break	1500	Tea/coffee break		
1530	4. Presentation of WPR water quality needs assessment findings in Fiji, Samoa, and Tonga	1530	(Cont'n) Presentation – DWQ surveillance/management	1530	11. Presentation of group discussion		
		1615	8. Group discussion	1700	Group discussion		
1830	Reception/Cocktails						



**REGIONAL OFFICE FOR THE WESTERN PACIFIC
BUREAU REGIONAL DU PACIFIQUE OCCIDENTAL**

**WORKSHOP ON DRINKING
WATER QUALITY SURVEILLANCE
AND SAFETY**

**WPR/ICP/HSE(2)/2001/TB/2
26 October 2001**

**Nadi, Fiji
29 October - 1 November 2001**

ENGLISH ONLY

INFORMATION BULLETIN NO. 2

(REVISED - 1 NOVEMBER 2001)

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