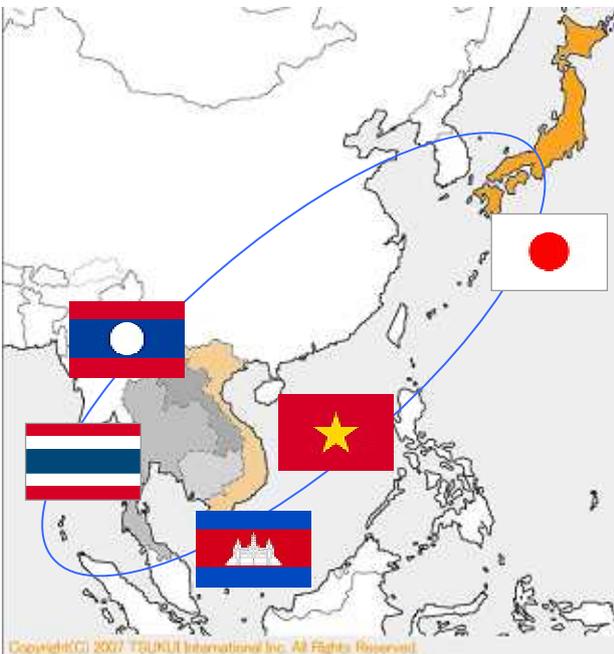


WaQuAC-NET Newsletter

Water Quality Asian Cooperation Network No.1

Let's join in the WaQuAC-Network

- * Let's make a network for the water supply and water quality management with people working or studying the water field in Asia.
- * We think it is necessary to cooperate continuously with people working in water field for supplying safe water to many people.
- * The problems which can not be solved alone may be solved through the cooperation by members of Network.
- * Let's create a place for exchanging opinions, discussing problems, learning experiences and developing the capacity.



Set up Member

Kamegai Yasuko, Kawashima Yasuhiro,
Kagata Katsutoshi, Kudo Yukio, Khut Vuthiarith,
Keo Heng, Ky Monichariya, Nakashima Eiji,
Por Kunnarith, Sasaki Shinichi,
Sasayama Hiroshi, Tamagake Mitsue,
Yamamoto Keiko, Yariuchi Mina.



For supplying safe water, Doing Network

Back ground

Capacity building projects for water supply utilities by JICA were carried out in South East Asia, such as Thailand, Laos, Cambodia and Viet Nam. The project periods were 3~5 years, which are not enough for the utilities to develop their capacities for supplying safe water sustainably. Capacity building needs more time, especially for specialists on water quality management and water treatment process. Even after the projects, counterpart people need supports sometimes.

Network system is very helpful to contact experts. On the network, we can exchange information, discuss problems, and learn practical techniques and new knowledge.

Our purpose is to develop personal ability each other by utilizing the network. We expect the members can contribute to supply safe water to the people in their countries. (Yamamoto)

Activities

To set up website,

To exchange information and useful technologies,

To discuss some problems,

To publish newsletter periodically,

To organize seminar or training, and

To send an expert for consultation.

Management Fee

By donation

Introduction of members

~Phnom Penh, Cambodia~

1. Outline of the utility

The Phnom Penh Water Supply Authority (PPWSA) is the biggest utility in Cambodia to provide water supply service to residents in and around capital Phnom Penh.

Though supervised organizationally by the Ministry of Industries, Mines and Energy, it is managed as an autonomy body.

Business summary of the PPWSA is shown below.

(as of year 2007)	
Water treatment plant	3
Capacity	235,000m ³ /d
Coverage rate	90%
No. of connections	162,000
Distribution network, km	1,460
Supply hour	24h/d
Collection ratio	99.98%
Ratio of Non revenue water	6.15%
No of staff per 1,000 connection	3.5

(Source; PPWSA)

2. Outline of the laboratory.

The lab of PPWSA is under the department of production and distribution, and 5 staffs work for the central lab (as of the end of Aug. 2008). The lab is available to analyze 37 items every month (including items to be analyzed daily and weekly).

Cambodian government set the National Drinking Water Quality Standard. The lab has aimed

at accurate analysis by introducing spectrophotometers, for example, to satisfy the standards. The standard contains items to be analyzed regularly of heavy metal and pesticide which are not available to be analyzed in the PPWSA's lab at present. Therefore, the lab has contacted with other labs of ministries and universities, and been trying to find ways for collaborating.

The PPWSA lab surveys conditions of rivers which are water source of their water and also monitors water quality at taps in its supply area.

3. Current situation after the Cooperation

The PPWSA has been upgrading their system of water quality management. They introduced Bio-Assay system by reference to Yokohama WW Bureau, Japan. Some fishes are kept in an aquarium, filled with settled water, installed in the lab and observed to monitor safety of the water.

Water quality in the water treatment plants is also monitored for 24 hours. During night time, 5:00 pm to 7:00 am, operators in all three plants monitor water quality such as turbidity and pH. In case of facing a problem, chief of lab would be informed.

Moreover, PPWSA changed a system of monitoring water quality in April 2008, in which ordinary staffs are involved to the monitoring. This idea was originally introduced for increasing points and frequency of monitoring. And this time the



Members of the central lab, PPWSA
(from left, Mr. Rith, Mr. Heng, Ms. Soursdey,
Ms. Vanna, Ms. Charya)



Aquarium for bio-assay in the central lab.

system was conducted with additional aim to let staff understand importance of water quality, which is an idea by the General Director, H.E. Ek Sonn Chan. Until then, lab staff goes to 20 fixed sampling points around supply area every week to take samples and analyze residual chlorine, turbidity and water temperature there. In the new system, ordinary staff of the PPWSA joined for taking samples; appointed staffs take samples at tap of their home in the morning once a week, and bring the sample to the lab in PPWSA every week. In consequently, the lab collects 65 samples in total through four days a week, and is able to monitor residual chlorine at taps continuously.

The more staffs are involved to the monitoring water quality, the more effective for improving their awareness on water quality. Moreover, the result of the analysis is distributed to the staffs who take sample, which can inspire conscious for water quality.

PPWSA also started to develop capacity for biology, which because PPWSA had a trouble for algae several years ago. A new staff was employed for biological field and shares knowledge and experiences with the chemists.

As mentioned above, it is quite impressive that PPWSA keeps developing their system of water quality management by themselves across the organization after the project finished.

(By Mina Yariuchi)



Car for water quality monitoring in supply area
(with Mr. Keo Heng, chief of lab)

Opinions from Partners

Ms. Yasuko Kamegai

(Dispatched to PPWSA for eight months in total in 2004 and 2006)



I am very happy to see the all laboratory staff members in action successfully. The photo in this paper shows them very admirable. In fact, it is surprising that they have started and continued self-motivating activities for improving water quality management like bioassay. (Great!)

It is often seen that lab person works only for chemical analysis but forgets what the purpose is. However, the PPWSA lab is functional under the great purpose of protecting drinking water quality. Moreover, the lab leads the all staff in the water-works in water quality management. At present, all staff aware the goal is to provide water containing certain amount of residual chlorine at the end of pipelines. It is great outcome.

I hope the lab advances its contribution to water quality with the consistent work and reliable monitoring. Appropriate advice from experts is important for taking effective action. For example, the approach of bioassay is interesting, but I have one question what the lab staff needs to do when he/she faces the death of fish. Has the lab established the rule for such case of emergency?

Unfortunately, poor accessibility of technical document prevents Cambodian chemists from successive self-improvement. It is strongly recommended to establish lab person network for discussing technical matter by mother tongue. Until then, we Japanese experts are willing to be an adviser of you. The situation of a biologist is severer because there are only few biologists, and identification of microorganisms requires special proficiency, so the biologist needs more help. Will anyone open an advisory office for young biologist? It could be an on-line office.

I feel my eyes on ex-counterparts as if they are my relatives, but actual action was difficult to take. I expect WaQuAC could be a good place to keep relationship among us in the actual technical advisory.

Question & Answer Corner

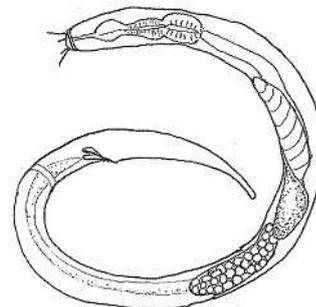
We welcome any opinions, and questions to this Q & A Corner. Please contact us.

Q: Nematoda from tap water !?

When we checked some tap waters, we found a few Coccoomyxa, Nematoda and Amoeba in the sampling water. Can we say it drinkable water? (from Mr. P.K.)

A: Most countries do not have the safety standard of algae or small animals in the drinking water.

They come to the pipes passing through the filter in the water treatment process or from the end of pipes.



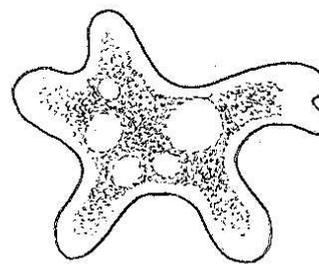
Length 1~3mm

Figure of Nematoda

Nematoda: In most countries, 3 ~ 4 cells of Nematoda in 10 liter- sampling water are accepted experientially.

Several institutes examined that Nematoda has bad influence to human health or not. As a result, they have not found any bad influence so far.

Amoeba can be also regarded as above. But Entamoeba histolytica, kind of amoeba, causes amoebic dysentery. They have no resistance to the chlorine. And they cannot alive in the water which contains residual chlorine. So it is very important to keep residual chlorine in the tap water.



Length 0.02~0.5mm

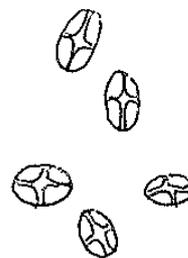
Figure of Amoeba

Coccoomyxa is green algae. It has resistance to chlorine. It however does not affect human health.

5 ~ 6 cells of Algae in 10 milliliter-sampling water are accepted experientially.



Microcystis: Microcystine are produced by some of microcystis genus, Microcystine is toxic substance. It is a parameter to be considered in Japan Water Quality Standard for Drinking Water. Its target level is less than 0.0008 mg/L.



Length 4~10µm
Width 3~5µm

Figure of Coccoomyxa

It is so difficult and costly to remove a few algae and small animals.

Therefore it is quite important to control number of algae and small animals, and to monitor residual chlorine.



(Answerer: Mr. Sasaki. Yokohama)

When you agree network activity,
Please contact our office staff

Next activity

No2 Newsletter
Report from Laos water supply authority
HP: Now under construction.
[\(http://www.waquac.net/\)](http://www.waquac.net/)
Published in December 2008
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