

## **WaQuAC-NET Newsletter** *Water Quality Asian Cooperation Network*

### **Launch of Network Activity**

After one year preparation, English version of WaQuAC-Net Newsletter no.1 was published and also opened a website in this February. URL is <http://www.waquac.net>.

We will improve contents of the website with the network members little by little. The information of WaQuAC-Net is being spread by members. Mr. Shimazaki who works for Saitama Municipal Waterworks Bureau (SWWB) distributed handbills at the meeting of WTI (Water Training International), and several people have contacted us. We realized that there were many people who were interested in the international cooperation. WaQuAC-NET will provide the information of water supply in the developing countries for Japanese members, too.

We focus on the water supply of Laos in the second newsletter. SWWB has a very good relationship with Laos government. A seminar on "the International Cooperation of Local Government" was held in Saitama City on 12 February, 2009. There was a presentation about the cooperation to Laos government by SWWB. The cooperation started in 1992. Some staff of SWWB joined in the JICA mission, and some of others joined in JICA technical cooperation project as experts. SWWB has proposed and implemented a "grass-root assistance". These cooperation have been continuing for more than

15 years. Continuous support is very important for building a relationship of mutual trust and for good results of the cooperation. (Yamamoto.)

### **What's New?**

New year party and editorial meeting was held on 10<sup>th</sup> February at Yokohama station building. Ten members enjoyed talking and drinking.



### **[Dispatch of an Expert to Laos]**

Mr. Ishikawa Tomoichi is an engineer who is in charge of the block-system in the distribution pipe net in SWWB. He will go to Laos as JICA expert for cooperation of training system in province. A dispatch period is one year, from 25<sup>th</sup> March, 2009 to 26<sup>th</sup> March, 2010. He will belong to WASA (Water and Sanitation Authority, Ministry of Transportation and Public Works). He is also interested in the improvement of water supply system in rural area where people use untreated water from river. He's concerned about if his wife can stay alone at home when he travels to rural area for survey. We hope they enjoy their life in Laos.



### **Introduction of New Members**

- Mr. Takenaka Katsunobu, Mr. Sugawara Shigeru
- Mr. Odashima Akihiko, Mr. Wada Yoshiharu
- Mr. Nakanosono Kenji, Mr. Pheng Ty,
- Ms. Nisapas Wongpat, Mr. Nguyen Khoa Hien,
- Ms. Tran Thi Minh Tam

***We welcome new member any time.  
Please contact our office.***

#### **WaQuAC-NET Newsletter No.2**

Issued in April, 2009.

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#### Next activity

Newsletter No.3; on Hue water company (COWASU) in Viet Nam

## Introduction of Members ~ Laos ~

Kawashima Yasuhiro (Saitama City WWB)  
JICA Expert (May 2002 to March 2005)

### *Introduction*

Laos is composed of 17 administrative areas; capital Vientiane that is a political, economic center, and 16 provinces.

The Mekong River runs through a long and slender country to the South-North. And from capital Vientiane to the Champasak province in the southern part, the plain from above sea level 150m to 200m stretches to the Mekong banks of the river, and the seat of the Prefectural capitals exist.

There are three historical heritages in Laos; Plain of Jars located in the northern part of Xieng Khouang province, Wat Phou in the southern part of Champasak province (ruins of Khmer that built Angkor Wat), and Luang Prabang whose entire town are registered in the World Heritage. Tourism centered on these would be an important source of foreign exchange in the future.

It is said that more than 60 ethnic groups live in Laos, and there is a belief in people's daily lives. Every village surely has Buddhist temples, and a scene that people kneel to the begging priests at the roadside is seen now here and there in the early morning. It is said by the tourists and the stay experienced persons to Laos that the country is full of the geniality and the smile.



### *1. Situation of water in Laos*

In Laos, only half of the population of urban area can receive the supply of safe tap water (as of 2002). The National Development Plan of Laos aims raising water supply coverage ratio up to 80% in the urban in 2020, and placed the development of water supply system as an urgent issue to correspond to the increasing urban population. The Asian Development Bank has been supporting the development continuously as its main donor in this field.

Water service in Laos is basically divided into the urban water supply and the rural water supply. The rural water supply has been managed by the communities under the supervision of Department of Health. Their systems are mostly hand pumps and public taps. On the other hand, the system of urban water supply has house connection. The urban water service is supervised by Water Supply Authority (WASA) established in the Ministry of Public Works and Transports. 26 utilities has run urban water service business across the country (as of 2004) aiming at the self-supporting accounting.

The Vientiane Capital City Waterworks Bureau defends lifeline of capital Vientiane that is the center of economy and industry, and is a leader of the urban water supply in Laos. Before 2000, Vientiane WWB controlled the other provincial WWBs and each provincial WWB was branch of it. The Vientiane WWB is a leading force in its scale and technology, and is put in charge of technological development and implementation of training and workshop on human resource development, and technological corporation on the project for other WWBs.

Japanese assistance to Laos started from a grant aid project to build Kaolieo WTP (the first modern water treatment plant in Laos) in 1964, and continuously supported for distribution pipes in

Vientiane and elevated tanks. In 1992, expansion project of Chinaimo WTP (the largest water treatment plant in Laos), and from 2006 to 2008 expansion project of Kaolieo WTP (20,000 m<sup>3</sup> 60,000 m<sup>3</sup>) were implemented.



Training Center; established in 2007

## 2. *Project for Capacity Development of Water Supply Authorities in Lao PDR*

As water supply system in Laos was developed rapidly to achieve the National Development Plan of Laos, the technical cooperation project was implemented from September 2003 to August 2006. Aims of the project was to built capacity of engineers working for operation and maintenance of water supply system, and management staffs working for waterworks bureau. To set up this project, Saitama Waterworks Bureau, including me, had worked harder and contributed to dispatch experts (including lecturers of seminars) and implement trainings in Japan.

As this three-year-project brought up trainers and made training materials, training system was set in three areas in Laos (central/ northern/ southern).

The project aimed to develop level of technology of nationwide engineers by step-by-step. Target of capacity building was gradually expanded from trainers, senior engineers to engineers. And it resulted in setting up systems of organizational capacity building, as many trainees turned to be trainers in the following step. Main trainings were

implemented mainly by Laotian lecturers, which could minimize input of the project. Short-term Japanese experts supported implementation of seminars when it was necessary. And utilization of the NWTTI (a training center on water supply technology in Thailand) could enhance effectiveness of technology transfer (because of similarity between Laotian and Thai language).



Mr. Kawashima (left) received an honor from the vice minister (right).

## Recent Reports from Laos

UKAI Tomohiro: JICA Volunteer (Dec 2007 ~ )  
(Nagoya City Waterworks & Sewerage Bureau)

### 1. *Latest Topics in Vientiane WWB*

The Vientiane Vientiane Capital City Waterworks Bureau has three main water treatment plants; Chinaimo WTP (80,000 m<sup>3</sup>/day), Kaolieo WTP (20,000 m<sup>3</sup>/day), Donmakai WTP (20000 m<sup>3</sup>/day), whose total capacity is 120,000 m<sup>3</sup>/day. Population of Vientiane has been increasing rapidly in accordance with recent economic development, and demand of water is supposed to increase as well. Coverage ratio of water supply is low level, around 45% as of 2009. One of the reasons of it is that the distribution network has not been developed yet. However, the fundamental reason is that the capacity of water supply cannot catch up with rapid raise of

water demand.

Therefore, a project is now under going to expand Kaolieo Water Treatment Plant with Japanese grant aid, which is planned to complete in April 2009. After the expansion finished, capacity of Kaolieo WTP will rise from 20,000 m<sup>3</sup>/day to 60,000 m<sup>3</sup>/day, and this capacity can contribute to supply water not only to central Vientiane but also to western area of the city.

And one of the most focused points of the project is installation of pumps for dosing chemicals (such as alum, calcium hypochlorite) to raw water regularly. Comparing with Japanese level of technology, this would be not big issue any more, but here in Laos, dosing has been conducted by gravity flow in most treatment plants. This is the first case to install quantitative chemical dosing system by pumps. Once skills to maintain the pump and to take countermeasures against accidents would be established, I expect technology of Laotian WWBs would be lead one stage up.

## **2. On the Water Quality Laboratory**

The laboratory in the Chinaimo WTP, where I am dispatched, is the only one lab among WWBs in Laos, which is capable to analyze all 37 items set by the Water Quality Standards.

I am the third dispatch of JICA Volunteer, and some experts had been also assigned to the lab during the capacity building project to support staff.

Owing to the continuous corporation, technical level of the lab staff is high, and is enable to treat measuring instruments such as spectrometer, atomic absorption spectrometer rightly and to exam bacteria relatively properly.

Especially, there are only a few atomic absorption spectrometers in Laos, therefore samples are brought and requested to analyze by outside; such as other labs, factories and research

students. A lot of requests of analysis, including items analyzed with other equipment, comes from outside.

I think that the lab of Chinaio WTP would contribute to not only water supply field, but also other fields such as control of industrial sewage, health and research.

However, there are a lot of issues. Lack of budget and human resource is serious, especially, I must say. Regarding budget, the WWB can afford reagents and apparatuses, but all equipment and instrument including pH meter, turbidity meter and autoclave were provided by JICA, and they seem to have difficulties to manage budget for their spare.

And there are two staffs in the lab. Considering amount and importance of their job, and bringing up the next generation, the staff should be increased. Importance of water quality analysis would be increasing more with an increase in economic development. Therefore I think establishment of foundation to manage these problems by themselves can have great influence for development of Laos.



Mr. Ukai (left) with his counterparts



## Experience as a JICA Volunteer at the Water Treatment Plant of Vientiane WWSa, Laos

OKOSHI Hiromi

For 2 years and 3 months from December, 2005, I had instructed my counterparts (main staff of the laboratory of water quality analysis) in the Vientiane Capital City Waterworks Bureau, capital city of the Lao People's Democratic Republic.

Some of them were lack of the knowledge about not only chemistry but also mathematics. I thought that it was important for them to learn basic knowledge first. I taught it to them using Japanese secondary school textbooks translated into Lao language. Then, I felt the counterparts became to recognize that each analysis work has meaning. They are also not good at teaching technique to their subordinate staff. I did "Instruction to make them think" to my counterparts, and they taught subordinate staff in the same manner. I felt their instruction method was improved a lot. As compared to the developing countries, Japanese basic education and environment of study are really wonderful.

My two-year-activity was not enough for them, so I made a manual of water quality analysis with my counterparts. It was very good for them to analyze water quality continuously without help.

In my daily life, I did not have any difficulties with electricity, water supply and so on. And Laotian were mostly gentle and cheerful. I enjoyed my activity and worked smoothly.

It is said that Laos is the poorest country in South East Asia. However, food self-support

ratio is high and nobody starves to die. People seem very happy. Especially, the smile and the toughness of Laos's children were so wonderful that I want to show it to Japanese children. Laos's children were always together with their family and relatives. When I compare them with lonely Japanese children who live in rich society, I couldn't help thinking what real happiness is. I had really good experience in Laos all through the two years and three months. I was happy to work as a JICA Volunteer. I believe that I can take advantage of this experience for my life.



At the laboratory  
Right; Ms.Okoshi  
Left; Ms.Noy, counterpart



## Question & Answer Corner

**Q. Arsenic pollution of groundwater is a serious problem now. Are there any problems of arsenic pollution in the water supply using surface water? (from Mr. T. V.)**

**A. Arsenic pollution of groundwater comes from the geological condition. However, in the case of surface water, arsenic pollution is mostly caused by the wastewater of hot springs or mines. Arsenic in the water is removed by the pre-chlorination and sedimentation process.**

Even though the concentration of arsenic in the water is very low, taking such water for long time causes the chronic poisoning such as keratosis of the skin, black skin, neurological disease and skin cancer. In the case that the source of water supply contains arsenic, we have to consider changing the source first. If it is difficult, we must remove arsenic in the water by some treatment methods such as, coagulation and sedimentation, adsorption by the activated alumina, nano-filtration and reverse osmosis. There is also the method of dilution. Arsenic exists in the water mostly as trivalent or pentavalent inorganic compound. Removing the trivalent arsenic is difficult in comparison with pentavalent. Therefore, trivalent is changed to pentavalent by pre-chlorination. The pentavalent arsenic is effectively removed by sedimentation process. It is also necessary to consider sludge treatment because the arsenic removed from water exists in sludge, (quoted from the Japan Design Criteria for Waterworks Facilities in 2000.)

- Sapporo Water Works Bureau uses the river water which contain arsenic caused by the hot spring and removes it using coagulation and sedimentation process. (Answer: Yamamoto Keiko, JICA)



- As a result of water quality analysis of Mekong River in Vientiane, Laos, arsenic is not detected. (Mr. Ukai).
- Phnom Penh Water Supply Authority, Cambodia uses Mekong River. Arsenic is much less than Cambodian standard according to the data. (Ms. Yariuchi)

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