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Happy New Year 2019



Question & Answer Corner

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

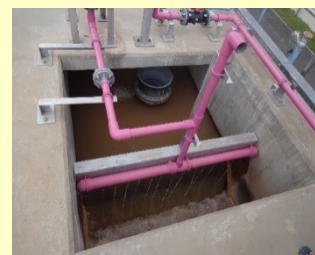
Q: What are the points to pay attention to when operating the water treatment system of rapid sand filtration method ? (Mr. T.H. Sudan)

A: Rapid sand filtration method has four processes of mixing, flocculation, sedimentation and rapid sand filtration, and good results of treatment can be obtained by proper operation of each process. In order to keep the performance for many years, there are several points to pay attention to at the start of operation and thereafter. I will describe the key points at each process.

1. Mixing

To obtain good coagulation, it is necessary to spread to the whole raw water of mixing basin immediately after the coagulant is dosed. And it also must be checked whether the amount of coagulant determined by jar test is dosed. If the diluter of coagulant is installed at the dosing

point, it must be confirmed that enough dilution water is being supplied. The picture on the right is an example that diluted coagulant is dosed at multiple points.

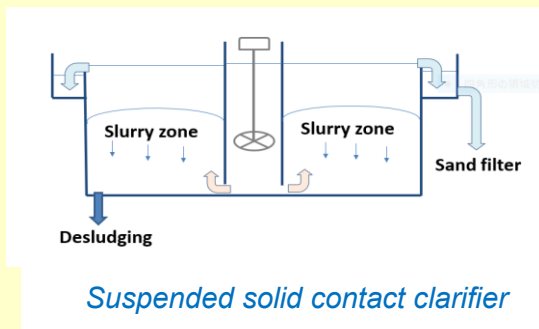


2. Flocculation

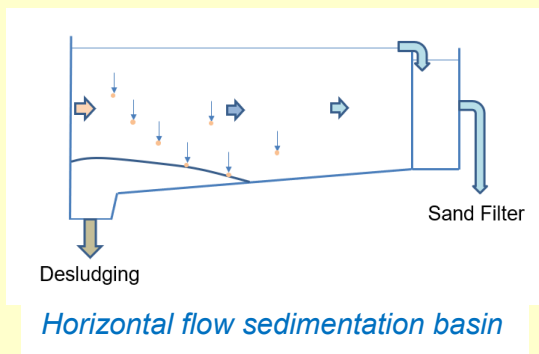
The dosing rate determined by Jar test is not absolute. If the actual flocculation is poor, it needs to increase the dosing rate. If the mixing is electrically operated, proper mixing strength can be obtained, but in the case of a baffling mixing, the raw water amount must be kept within the design range to obtain the proper mixing strength.

3. Sedimentation

There are two kinds of sedimentation, one is a horizontal flow type sedimentation and another is a clarifier (suspended solid contact clarifier). In the clarifier type, flocculation and sedimentation are carried out in the same basin. To keep performance of the clarifier, it is important to keep proper concentration of slurry zone (floc layer). So, the regularly (preferably daily) drainage of sludge is required.



In the horizontal flow type, when the sludge accumulates a lot in the sedimentation basin, the performance will decrease due to increase the flow velocity. So, periodical drainage of sludge is required.



Regarding drainage time, for both types, it is determined by observing the turbidity of the drained sludge water, which has become somewhat clean. It is required to empty the sedimentation basin and wash out sludge with pressure water several times a year as well.

4. Rapid sand Filtration

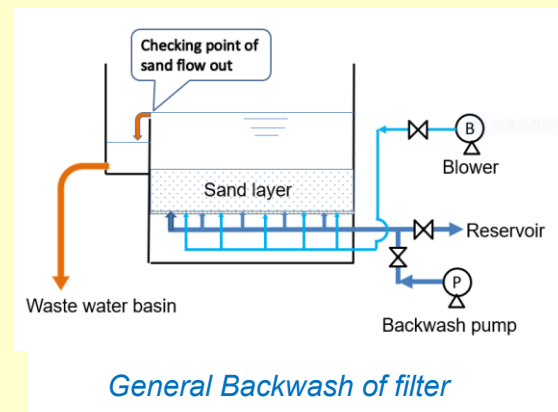
Floc not settled down in the sedimentation basin is trapped at the filter basin. To keep this

function, proper backwash is important. Setting method of backwash procedure by demonstrative check is as follows.

a) Adjusting of backwash flow rate

A backwash pump or a backwash tank is installed for the sand filter to ensure adequate backwash flow rate. However, there are many cases the filter sand is flowing out without adjusting the backwash flow rate. In order to avoid this, it is necessary to adjust the backwash water flow rate at the start of operation.

Since the diameter of the filter sand is usually 0.3 to 2.0 mm, a sieve with size of 0.3 mm mesh is used for checking the sand outflow. Receive the backwash effluent flowing **0.3mm mesh sieve** into the drainage trough and check whether the filter sand is trapped. If trapped sand is observed, reduce the backwash flow rate until the sand is not trapped.



b) Backwash time

Since the purpose of backwash is to wash out adhered floc from sand layer, it is wasteful of water if backwash continues even after backwash effluent became clean. Measure the turbidity of the backwash effluent every minute and set the wash time when turbidity reduction stops.

There is one more point to mind; keep the filter in good condition. Although the backwash is

proper, if there is a lot of substances which was not flocculated remain in the settled water, the sand grains stick these substances to the surface. These substances cannot be removed completely by ordinary backwash, and it causes deterioration of sand filter and filtered water. Therefore, it is important not only the proper backwash, but also proper coagulation-sedimentation, such as proper coagulant dosing, control of raw water flow rate not for exceeding the treatment capacity (designed capacity). Also, the sand layer thickness requiring to function fully is 1000 times of the sand effective size^{*1}, so the sand layer with an effective size of 1.0mm^{*2} is required the depth of 1m or more. When the water treatment plant newly constructed, sand is usually filled about 1.15m with some excess. Measure the depth of the sand layer every year and check whether there is no decrease. If proper operation and maintenance as described above is carried out, the filter basin does not need to replace the sand and will keep its performance for many decades.

^{*1} Sand effective size: filter sand particle size with passed through weight percentage of 10% in filtering sand sieving test expressed in mm unit. The number of particles smaller than the effective size and the number of larger particles become almost same.

^{*2} Many developing countries use filter sand with an effective size of 1mm. But in Japan, sand effective size is set to 0.45~0.7mm in the Design Criteria for Waterworks Facilities.

(Answerer:
Mr. KAGATA Katsutoshi
Kitakyushu City Water and
Sewer Bureau, O.B.)



Challenges of Mr.KAWASHIMA !

**Working for NPNL, Vientiane Laos
as Senior Adviser**

Mr. KAWASHIMA
Yasuhiro retired
from **Saitama City
Waterworks
Bureau (SCWB)**
in the end of last
March. Then, he
was assigned as
senior adviser in



Mr. KAWASHIMA

Vientiane Capital Water Supply State Enterprise (NPNL), Laos on April 26, 2018. He made a direct contract with NPNL, not JICA expert. It was rare case. So, I interviewed him at Akihabara, Tokyo on August 23, during his temporary return.

(Ms. YAMAMOYO, WaQuAC Office)

Yamamoto) It's been long time. You look very well. Thank you for accepting my interview during the busy time of temporary return from Laos. First of all, I want to know how you contracted with NPNL directly and became a senior adviser.

Kawashima) I had worked for JICA Capacity Building Project on Water Supply in Laos centered NPNL, as Chief Adviser from 2003 to 2006 for 3 years. NPNL had facility of training center and planned new building supported by French Government (completed in 2008). JICA Project implemented soft parts like building a system of training center, developing training materials, trainer's training and carrying out several training- courses. It was to strength the training system and the technical ability for staff members in NPNL. The Project finished in

September 2006. After that, SCWB continued the several cooperation to Laos such as JICA grass roots technical cooperation, the friendship program and so on. Moreover, from 2012, [MaWaSU Project](#) started. I worked in Japan mainly for supporting the projects. And, sometimes I went to Laos on a business trip. Or trainees from Laos came to Saitama City. So, I could keep the friendship with Laotian counterparts. Around three years ago, I was asked to help to strengthen the training system of NPNL from Mr. Khampheuy Vongsakhamphoui who is Director General and main counterpart of Laos projects. Since then, I was consulted about it from Mr. Khampheuy again. As I had wanted to follow up on the capacity building project 2003-2006, I went to Laos three times and discussed with him. Finally, he and I reached to the same opinion of “to bring up the next generation in the water supply field closely and steadily.” I decided to go to Laos after my retirement. I wanted to support their growth and development while living the relaxing life in my favorite country, Laos.

Yam) Actually, what kind of work do you do?

Kaw) Basic system of capacity building had been completed in the project finished in 2006. After that, staffs of NPNL have been carrying out the training courses continuously. However, it has been over 10 years. The number of new staffs increased and the situation of NPNL changed. Therefore, it is necessary to improve the contents of training and also trainers' level. Director of training center is my counterpart. I will develop training materials and train trainers with him mainly. I started my work at the Water Supply Technical Training Center (WTC) of NPNL on April 27. There is my office in the second floor in management building of WTC. WTC already started 36 training courses from May to July. I am expected to improve training programs, curriculum, teaching materials and so

on.



Opening of Training Course

Yam) Please tell me your working conditions.

Do you live with your family in Vientiane? I think your family also love Laos so much.

Kaw) I have 3 years contract. But I think to repeat my stay of several months in Laos. I cannot take my family, because my son has grown but needs my wife's support little bit more. Actually, I don't get a salary yet. Mr. Khampheuy said, “Please wait for a while”. (I made an official contract in the end of October. However, salary level in Laos is still low, and after subtracting the tax, my salary will disappear by house rent.)

Yam) How do you enjoy your single life in Laos?

Kaw) I rented a house. There are mangoes, papaya, lime and jack fruit trees in the garden. I pick and eat them every day. I bought a bicycle for improving lack of exercise. And I cycling along the Mekong River seeing the sunset. For save money, I cook and do housekeep including feed the fish.



His favorite bicycle



Sunset in Mekong River

Yam) It sounds fun. In 1991, I went to Vientiane firstly. I remember to have felt something nostalgic in quiet atmosphere there.

Kaw) Yes, I am enjoying it because I live in Laos after a long absence.

Yam) By the way, recently, new project has

Outline of the Presentation of Dr. SUGAWARA

1. Current situation of water supply in Indonesia

- 1) Development of water supply service cannot catch up with increasing of urban population in the urban area. (The coverage ratio of piped water supply fell down from 19.08% (2000) to 10.87% (2015) in Indonesia, and from 45.37% (2000) to 14.37% (2015) in Jakarta)
- 2) NRW ratio at each local public water supply company (PDAM); less than 20 % of NRW ratio in 39 PDAMs, 20% to 30 % in 134 PDAMs, 30% to 40% in 110 PDAMs, and more than 40% in 88 PDAMs respectively.
- 3) Lack of human resources in PDAMs.

2. Recommendations

- 1) LCC (Life Cycle Cost): It is necessary to develop technical standards of materials and systems, criteria of facility design and O&M, and inspection system, which should be based on facility design concept, and can ensure safety. ➡ Chances for Japanese companies to enter the market and accumulate track records.
- 2) Support for the Jakarta Water Supply Company (PAM Jaya): Development (Expansion and rehabilitation) of its facilities with utilization of Japanese Yen Loan scheme.
- 3) Support for the Training Center in Bekasi*: recommended upgrade of facilities and contents of training modules, human resources development

* The Project Type Technical Cooperation for Water Supply, Sanitation and Environmental Training Center, 1991-1997

- 4) Capacity development of financial situation of PDAMs: Human resources development should be supported by JICA as follow-up activities of its former Technical Cooperation Project, in good coordination with WOPs (Water Operators Partnerships) organized by Indonesian Water Supply Association (PERPAMSI), and JICA's grass root projects.
- 5) Facilitation of sharing roles and responsibilities between central government and PERPAMSI: It is necessary to establish systems to develop technical standards and inspection/certification for materials and equipment also related human resources through utilization of on-going JICA training program "Strengthening country capacity of water supply administration" in Japan.

3. Issues

- 1) Less developed areas in the eastern part of Indonesia and remote islands.
- 2) Expansion of rich-poor disparity.

4. Critical success factors of business development for Japanese private companies

- 1) Good relationship with local parties.
(Partnership with local companies)
- 2) "Persons", "Partnership", "Information-sharing", and "Willingness"!

Dr. Sugawara said that he is planning to move to Bali, Indonesia in 2 years, and wants to contribute to technical development of local water supply companies there.

(by Ms. Yamamoto, WaQuAC-NET Office)

The 5th Osaka Meeting

A presentation on the flood and drought impacts on water supply **-Case of MWA-**

Reported by Mr. SUGINO Manabu
(Osaka Water Supply Authority)



Outline

The 5th Osaka meeting was held in the evening of September 14, 2018. Ms. Sivilai and Ms. Chaweeapan from MWA (Metropolitan Waterworks Authority, Thailand), who visited Japan to take part in IWA World Water Congress in Tokyo, gave a presentation. The participants were Mr. Nagashio, Mr. Fujitani, Mr. Ozaki, Mr. Kitagawa, Mr. Hayashi, Mr. Koseki and Sugino from the Kansai region, and Ms. Yamamoto from Tokyo. The total number of participants was 18 including 8 non-members. The meeting was held in a friendly atmosphere, with having Durian and Mango chips they brought as our souvenir. After the meeting, friendship party was held. Almost all participants joined the party.



Summary

1. Flood Crisis

- Big typhoon hit in 2006, and turbidity of Chao Phraya River increased to 2,500NTU (about 50 times higher than normal turbidity).
- Heavy rain caused sever flood in 2011 and JICA dispatched experts for supporting and also WaQuAC-NET advised us through networking early.
- We hadn't experienced such a big damage

before, so we needed countermeasures.

- Piling sandbags, the earthen dyke was built around the water treatment plants and intake point.

2. Salt intrusion during drought

- Since the land is relatively flat in Thailand, salt water goes up to about 90km up-stream.
- Chao Phraya River is also used for farming, and large amount of water was used upstream, which leads to not enough fresh water to push against salt intrusion, then the concentration of salinity in raw water increased.
- People could feel the tap water was little salty at that time.

3. Microalgae Bloom

- Due to serious filter clogging by *Aulacoseira* sp. Bangkhen WTP shut down for few hours in 2015.
- Production rate decreased 20%
- Mr. Sasaki from WaQuAC-NET has continued to work with MWA on microalgae detection, and MWA seminar was held in this February.
- In 2017, Royal Irrigation Department decided to hold huge amount of rainwater in paddle field for a few month to prevent flood in lower area and then released it into Chao Phraya River at the end of rainy season. This stagnant water has *Cylindrospermopsis* sp. blooming and entering MWA raw water canal. Mr. Sasaki gave advice to encounter against it.

4. Lesson from these crisis

- Although sandbags piled up around the water treatment plant, flood water flew over them and also came under them.
- Many chemical feeding facilities for water treatment, such as aeration, liquid oxygen, activated carbon and so on, have been built at intake point to mitigate water quality pollution, but some of them don't work presently.
- Efforts to convey freshwater from Maeklong Basin to Chao Phraya River to dilute saline water.
- Aquatic environment system is more complex

than being expected.

- MWA was swamped with inquiries after the flood crisis.

5. Discussion

- One of the solution to mitigate the damage of flood and salt intrusion is building intake station upper part of Chao Phraya River, however it will cost a lot.

- Unlike Japan, there is no support system between water utilities or city municipalities in Thailand.

- Sometimes any organizations don't learn from crisis or only take a short view.



Comment

They are struggling to further improve their organization. I learned the importance to learn from the crisis or disasters, to make decisions, and to take appropriate countermeasures.

A lot of disasters occurred this year in Japan such as huge earthquake in northern part of Osaka, heavy rain and flood, extreme hot in summer, several large typhoons hit in Kansai area, and huge earthquake in Hokkaido again. I considered that quite similar damages have occurred recently in Japan too, so there are a lot of lessons we can learn from MWA. We want to cherish the connections with MWA forever.



Friendship party

Introduction of Inauguration Symposium on Future Leaders Training Program

*Mr. MORITA Yasuhiko
(TEC International Co., Ltd.)*



The symposium was held on the occasion of launch of the scholarship program. As the first year's participants in the program, four participants arrived at Japan; Ms. Ei and Ms. Khaing from YCDC of Myanmar (see page 11 for the details), and Ms. Phaimany Sengphouvong from NPPL of Lao, and Ms. Kounthy Thor from MIH of Cambodia.

Two Myanmar participants are counterparts of JICA Project in Yangon which Mr. Morita has worked for: He reports outline of the symposium.

(Ms. YARIUCHI, WaQuAC Office,)

1. Introduction

The long-term training program to build future leaders of water engineering and utility management in south-eastern Asia was commenced in this September for the first time. This training program is implemented by The University of Tokyo together with Japan International cooperation agency (JICA). Four trainees are dispatched from Cambodia, Laos and Myanmar in this year, and have started 2-year program for master degree.

This article introduces the outline of the inauguration symposium which was held in the University of Tokyo on November 5th, 2018.

2. Feature and purpose of this program

The feature and purpose of this program were explained in the keynote lecture by Mr. Kato (Senior Vice President, JICA) and Prof. Takizawa (Univ. of Tokyo). The feature is to

provide students with not only master degree but also opportunities to learn Japanese modernization process and international cooperation activities in water service business. By attending this curriculum, it is expected to gain deep knowledge about Japanese philosophy of technological development and characteristic / advantage of Japanese technology.

In addition, this project promotes participation of a variety of actors such as university, ministries, agencies, local governments, joint public-private ventures and private sectors. This allows foreign students to build up extensive connections with Japanese actors and to gain comprehensive supports.

3. Expectation to this project

Four trainees expressed their wishes for this program after introducing water business in each country. In the panel discussion following trainees' presentation, panelists (private enterprise, local government, university, Ministry of Health, Labor and Welfare and JICA) gave their expectations to trainees.

1) During modernization process in Japan, technologies and knowledge from foreign

countries had spread widely in the educational system. We hope trainees to learn Japanese developing process of education and organization system to utilize the perception in your own country.

2) Technical knowledge is important. However, establishing governance system is more important to spread and utilize the technical knowledge. We hope trainees to learn governance of water supply works through site visit and practical work.

3) We hope trainees to learn the feature of Japanese technologies, especially the importance of life cycle cost of infrastructure.

4) Generally, Japanese technologies can't be employed directly in other countries. We hope trainees to try to improve Japanese technology to meet your country's demands with trial and error.

5) We hope trainees to utilize experiences and knowledge after returning your country. In addition, we wish trainees to consider relationship-building between government and private sector, not only the relationship among governments.



Trainees of this program



Group photo of trainees and panelists

Outline of this program (Presentation material)

Outline of "Water Engineering and Utility Management Future Leaders Training Program"



Objectives : The program aims capacity development of leaders for the next generation in waterworks. The graduates of the program are expected to lead their waterworks and the water supply sector of their countries to achieve better water supply service and waterworks management.

Problem- Solving Capacity

- Logical Thinking
- Learning from Japanese Experiences

Comprehensive Knowledge For Waterworks

- Knowledge of both engineering and management
- Capacity of both theory and practice

Aim :
For future leaders to gain Core Competence

Developing Networks

- With Japanese Waterworks and industries
- Among students

Contents :

1. Master's Degree course
 - Attending Urban Engineering course
 - Research activities
2. Custom made program
 - Utility management and water engineering
 - Japan's experience on water supply development
3. Internship at waterworks
4. Field trip to facilities in Japan
5. Participation in JICA's training course

Target Countries(2018) : Cambodia, Laos, Myanmar

Number : 5 per / year **Age :** less than 40 years old

Selection Process : Those who are expected to play leading role in waterworks in the future will be nominated as candidates in collaboration with each organization and JICA experts

**JICA President Award
Commemorative Lecture
by His Excellency Ek Sonn Chan**

His Excellency Ek Sonn Chan, Secretary of State, Ministry of Industry & Handicraft, Royal Kingdom of Cambodia, received the JICA President Award at JICA head office on 12 November 2018. Commemorative seminar was held on 13 November by JICA and Japan Water Works Association. Mr. Ek Sonn Chan had a lecture on "Cambodia Water Sector – History, Challenges and the way forward" for 90 minutes. There was an audience of more than 100. Some of them have contributed development of water supply in Cambodia and others are interested in water business in Asia including Cambodia. After his lecture, H.E. Ek Sonn Chan replied to questions carefully and took 1 hour for answer. We found his great concern on water supply of Cambodia with his eager speaking.



< Abstract of the lecture >

Before, there was water supply system built during French colonial period in the capital Phnom Penh. But its facilities and other infrastructures were destroyed during the civil war by Khmer Rouge in 1970's. When I (Ek Sonn Chan) was assigned as the general director of Phnom Penh Water Supply Authority (PPWSA), water was supplied to only a part of the city. Furthermore, there were many stolen waters including illegal connections by some PPWSA staff members. There were hardly water supplies in other cities. I began changing awareness of PPWSA staff members and shown them the clear road map to success. Then I got various aids and loans to be able to update and maintain facilities. Even under the rule of Khmer Rouge, I could have survived with my principle "Do or Die"; with which I revived PPWSA. Consequently, Cambodia has achieved the Millennium Development Goals in 2015. I am trying to improve water supplies all the country now. Newly shown Sustainable Development Goals (SDGs) are higher goals to Cambodia, and we still need supports by Japan and other countries to achieve the goals. Targets of infrastructure development of Cambodia are Water (irrigation, hydropower and water supply), Electricity, Road and Human Resources. To achieve Cambodian SDGs, 3H is necessary, I think. 3H are "Head", knowledge of staff members, "Hand", implementation, and "Heart", mind to make home country better and better.

(Mr. SASAYAMA Hiroshi, JWWA)

FRIENDSHIP PARTY

~IWA World Water Conference
& Exhibition 2018~
Tokyo, Sep 19, 2018

The IWA World Water Conference & Exhibition 2018 was held from Sep 16 to 21 in Tokyo. During the event, many WaQuAC-NET members participated in its oral presentation, panel session and exhibitions; and had good occasions to exchange each other. On this occasion, friendship party of WaQuAC-NET was held on Sep 19 with attending of mainly conference participants.

The attendees were 20 persons in total: Ms. Asami (National Institute of Public Health), Mr. Sasayama (JWWA), Mr. Nagashio, Mr. Ogura (Hanshin Water Supply Authority), Mr. Minaga, Mr. Fujitani, Mr. Morimoto (Osaka Water Supply Authority), Mr. Nakanosono (Goodman), Mr. Ono (Yokohama Water), Mr. Morita (TEC International), Ms. Uan, Ms. Sivilai (MWA, Thailand), Ms. Yamamoto, Ms. Yariuchi (WaQuAC Office) of our member. In addition, we invited young staff group of MWA, Thailand; Mr. Awirut Rattanachoo, Mr. Pipat Boribannukul, Ms. Siriporn Sutipunya, and Mr. Worawit Whangchenehom (their poster won the best poster session award!!). Also, two staff from YCDC of Myanmar, Ms. Ei Khain Mon and Ms. Khaing Khaing Soe, were invited, who had just arrived at Japan for a master course scholarship program of the University of Tokyo (the detail of the program is reported on page8). Unfortunately, some members could not join the party even they participated in IWA Conference due to preparation for or organization of IWA Events. The participants were excited in talking closely each other. (Ms. YARIUHI, WaQuAC Office)



Business Forum of IWA



(Back from left) Worawit, Yamamoto, Pipat, Awirut, Sivilai, Ono, Nakanosono, Ogura, Sasayama, (Front from left) Siriporn, Uan, Khaing, Nagashio, Ei, Morita, Asami (Prefixes omitted)

Welcome party for H.E. Ek Sonn Chan

November 12, 2018, Welcome Party for H.E. Ek Sonn Chan was held in Ichigaya, Tokyo. It was non-official and relaxing party gathered by old friends. We celebrated his receiving JICA President Award. JICA praised for his great contribution to Cambodia's water supply development over the years. (Ms. YAMAMOTO, WaQuAC Office)



From left, Yamamoto, Ek Sonn Chan, Sasayama, Nakanosono, Nishikawa, Hirowatari, Kakigi (Prefixes omitted)

Greeting Card 2019



We hope you and your family
have a healthy and fruitful 2019

2019 猪突猛進 GO GO GO!!

イイ一年になりますように!



We look forward to continued collaboration.



<http://waquac.net/>



WaQuAC Net
Water Quality Asian Cooperation Network



謹んで新年のお慶びを
申し上げます

今年も人に会い、あらゆる現場を取材します

2019年 元旦



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season's greetings
HAPPY NEW YEAR 2019

**HAPPY
NEW YEAR
2019**

翔

Fly again to My Dream



We wish you a year filled with peace,
good health, happiness and successful.

Family SHIMOMURA

Masahiro, Sakurako,

Yoshikazu, Kazuya, Maria Nagomi



Introduction of New Members
OMs. Ei Khaing Mon, (Myanmar)
OMs. Khaing Khaing Soe (Myanmar)

*We welcome new members anytime. Please
contact us!*

WaQuAC-NET Newsletter Vol.39

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WaQuAC-Net Office

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(Yariuchi, Yamamoto)

URL: <http://www.waquac.net/english/index.html>

Next Activity

January 14	Tohoku-Sendai Meeting
January 30	2019 General Meeting
March 15	Newsletter vol.40 in Japanese
April 15	Newsletter vol.40 in English