WaQuAC-NET Newsletter
Water Quality Asian Cooperation Network
http://www.waquac.net/english/

Volume 22, issued on October 5, 2014
For Safe Water, Do Network.

WaQuAC-NET Newsletter vol.22
CONTENTS

Question & Answer Corner

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

Q: The number of water utilities which use PAC as coagulant is increasing in the developing countries. But I heard that PAC doesn't work effectively under the bad condition. What kind of condition reduces the effectiveness of PAC in the coagulation process? *(Mr. K.A. Japan)*

A: ***(Answered by Mr. Katsutoshi KAGATA)***
(Former JICA expert)

Comparing to aluminum sulfate, poly-aluminum chloride (PAC) has advantage in coagulation of raw water with wide range of pH value or with high turbidity and low turbidity. Therefore PAC can get stable coagulation, even when raw water quality changed. However, in order to get good coagulation result, the appropriate dosing rate and mixing are necessary. Especially rapid mixing just after the dosing is the most important.

Usually the best dosing rate of PAC is decided by Jar test. However, in the real coagulation process, even if PAC of same dosing rate according to Jar test is injected, sometimes it cannot get the same coagulation result as Jar test shows. The biggest cause is insufficient rapid mixing just after the dosing. In the coagulation process, PAC requires more intense rapid mixing than it of aluminum sulfate because of its characteristics.

Jar test is carried out in the small container, therefore the rapid mixing after PAC dosing is done intensely and instantly. However, there are some cases that the rapid mixing takes longer time and is not sufficient because the quantity of processing water is large in the actual PAC dosing process. In order to get same coagulation result as Jar test, the intense rapid mixing same as Jar test is necessary.

Several points dosing or underwater dosing can get better effect of the rapid mixing. When the quantity of process water is small, if one dosing pipe is set appropriately for example just before rapid mixer, even one point dosing can get intense rapid mixing. When the coagulation effect (settled water turbidity) same as Jar test is provided in the real coagulation process, it can be judged the rapid mixing is appropriate.

As mentioned first, PAC has an advantage which can respond to quality change of raw water. However, usually most raw water can get the sufficient coagulation effect by the appropriate aluminum sulfate dosage. Selection of a coagulant requires the general examination including the comparison by jar test. (@end)

2. Information of Oversea Members

Support to the International Student from Cambodia

~ Sougoumizu Institute Ltd. cooperated for arsenic analysis ~

Ms. Soursdey who studies in the Graduate School of Hiroshima University started a field survey in Cambodia for her master's thesis titled "Arsenic Contamination in Cambodia and Effects and Continuity of Arsenic Removal Devices". She collected 49 samples under different conditions such as untreated and treated well water during both dry season and rainy season in arsenic contaminated areas, and did simple water quality test in Cambodia. However, since the accuracy was not high enough, she looked for a laboratory through WaQuAC-NET in order to analyze 49 samples with accurate method in Japan. Then Sougoumizu Institute Ltd. in Sakai City, Osaka undertook the analysis by "Hydride Generation ICP-AES (Inductively Coupled Plasma Atomic Emission Spectrometry)" for free of charge.

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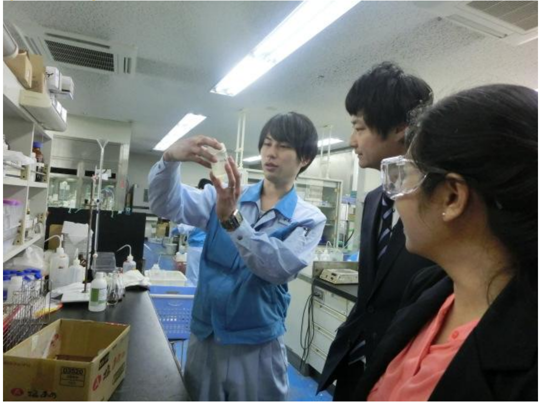
On May 13 Ms. Soursdey brought 49 samples to the Institute and explained arsenic contamination in Cambodia and contents of her thesis, and requested the analysis.

Thanks to their contribution, she completed her master's thesis based on the result of the analysis. The outline of her thesis was reported in WaQuAC-NET Osaka meeting on September 5, which will be reported on the next Newsletter. (@end)



Ms. Soursdey observed the pre-treatment of the samples at Sougoumizu Institute Ltd.
(Sakai City, Osaka) (by Yamamoto)

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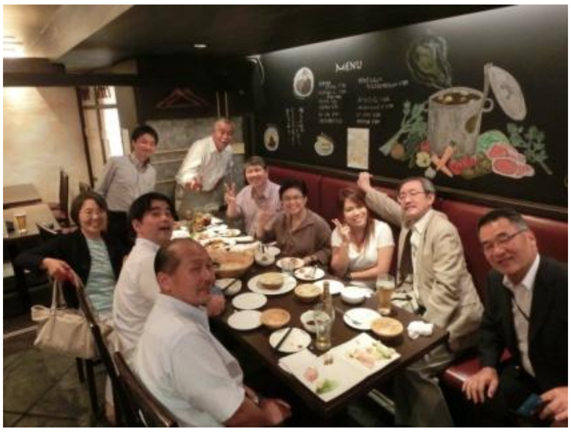
The Party

A. May 13, 2014 in Osaka: Friendship Party

Former JICA experts who are working for Osaka Water Supply Authority gathered and enjoyed with Ms. Soursdey from Cambodia in Japanese restaurant, Osaka. They had worked in several different Asian countries like Sri Lanka, Thailand, Nepal, Philippines and Cambodia.



B. June 30 , 2014 in Yokohama Welcome Party

Ms. Ratana, Governor PWA and Mr. Yongyuth, Deputy Governor MWA, Thailand were invited in JICA 3rd Executive Forum on Enhancing Sustainability of Urban Water Service in Asian Region. They and Japanese old friends renewed their friendship just after their arrival.

C. July 3, 2014 in Yokohama
6th SDDC Party

H.E.Ek Sonn Chan former General Director, PPWSA and now Secretary of State, MIH (Ministry of Industry and Handicraft), Mr. Samreth Sovithier, Duputy General Director, PPWSA in Cambodia and Ms. Tran Thi Minh Tam, Vice Manager, Customer Service, HueWACO in Vietnam were invited in JICA 3rd Executive Forum After accomplished their important roles in the Forum, they joined 6th SDDC Party which means that we enjoy frankly at the Small, Dirty, Dark and Cheap restaurant bar with former JICA experts of the project on human resources development . (@end)

3. Activity in the world

<<<<<<< Indonesia >>>>>>>

Dr. Sugawara was assigned as JICA Expert

Dr. Sugawara

Dr. Shigeru SUGAWARA, Director of JICWELS, has been dispatched to Indonesia as a JICA Expert and an advisor of water supply policy for 2 years from July 17, 2014. Though he was busy to prepare Indonesia, Mr. Sasayama, Ms. Yariuchi and Ms. Yamamoto interviewed him on July 10, in Yotsuya, Tokyo.

Q: You will go to Indonesia as an advisor of water supply policy. What is specific purpose?
A (Sugawara): I will belong to Human Settlements Bureau, Indonesia Ministry of Public Works and facilitate to utilize private companies in the field of Indonesian water supply throughout policy planning, recommendation for improvement of management and advice to making policy and institution for utilizing private company.

Q: It's very important purpose. Particularly in Jakarta, it's said that the water supply privatization was failed because the institution for utilizing private company was not enough. So what will you do specifically?
A: Firstly, I want to go to 5 main islands, Sumatra, Java, Kalimantan, Sulawesi and Papua to gain an understanding of the actual situation in each island. I think it's difficult to understand the whole because there are 410 water utilities in Indonesia. Briefly, it's not easy job. I have to collect and analyze the information of the policy and plan so that I will extract the agendas. And also I will collect and analyze the relevant information for utilizing private finance so that I can advise. More, I want to exchange the information with other donors and relevant organizations, particularly private corporations regularly. And I want to provide the information to related Japanese who are preparing for advancing into Indonesia as necessary.

Q: Please express your goals as an adviser of water supply policy.
A: I think it's not the time when we make a business with only water supply. I wonder if water service generates synergy with another sector service. Also, I want to make water supply system with a cost advantage. To that end, I must consider the priority area of the international corporation works by Japanese government.
On January 2010, Japan and Indonesia agreed to promote an industrial development and an infrastructure development by publics and privates centering on 6 economic corridors. Economic Corridors, which are the projects to promote economic growth by infrastructure development like construction a highway connecting main cities, may include the water supplying planning by utilizing private finance.

Anyway, my mission is to work as a bridge between Japan and Indonesia in the water field, or public and private. And I want to challenge the bridging among water, health, education and welfare, which is my lifework.

Q: Thank you for valuable talking though such a bad weather today. Good luck for your job and health.

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On August 4, Dr. Sugawara has sent email with a photo from Indonesia. He informed to publish the news for his activity and information of Indonesia. (By Yamamoto)

Photo right
Dr. Sugawara, third from the left, with Staff of Water Development Bureau, center, Mr.Mohamed. Nacil, new director general, he has 5 rank in KARATE !! (@end)

4. Activity in Japan

The 3rd Executive Forum for Enhancing Sustainability of Urban Water Service in Asian Region

Reported by Keiko YAMAMOTO (WaQuAC-NET)

From July 1 to 4, "the 3rd Executive Forum for Enhancing Sustainability of Urban Water Service in Asian Region" was held in Yokohama, Japan, organized by Yokohama City and Japan International Cooperation Agency (JICA). The 1st forum was held in January, 2010 at the same place as the 3rd one. The 2nd forum was held at Tokyo International Forum in October, 2011. In accordance with the Yokohama Forum Statement in which all participants of the 1st forum promised to continue the executive meeting for improving the water supply in Asian region, the 3rd forum was prepared by Yokohama Waterworks Bureau and JICA.

Theme of the 3rd forum was "Sustainable management of water utilities". Participants were 31 executives of water utilities and government offices from 12 Asian countries; Bangladesh, Cambodia, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Laos, Sri Lanka, Thailand and Vietnam.

On July 1, after opening address by Mr. Kazunari DOI, Director General, Yokohama Waterworks Bureau and Mr. Shigeru KIYAMA, Vice President, JICA, Panel discussion on "Changing world and Sustainable water service" were held.
At first, Prof. Yasumoto MAGARA, Hokkaido University, gave a keynote address. Prof. Satoshi TAKIZAWA, University of Tokyo presided in the panel discussion. Panelists were Dr. Atsushi MASUKO, former Director General of Tokyo Metropolitan Waterworks Bureau, Mr. Shigeo MIZUTANI, CEO, Swing Corporation, H.E. EK Sonn Chan, former General Director, Phnom Penh Water Supply Authority (PPWSA) and Mr. Masami FUWA, Director General, JICA.
They discussed the way of future water service and cooperation among the Asian water utilities.

There were 4 sessions through 3 days. Discussion themes were "Raising revenue", "Maintenance of water supply facilities and procurement of equipment and materials", "Human resources development" and "Partnership". Several participants presented their success cases and others asked many questions or commented them. They exchanged their experiences and opinions enthusiastically.
Water utilities in Asia improved or improving have surely increased like PPWSA in Cambodia, Metropolitan Waterworks Authority in Thailand, Manila Water, Metropolitan Cebu Water District in Philippines, HueWACO in Vietnam and Bangalore Water Supply & Sewerage Board in India.

3rd Forum in Yokohama Symposia

In addition, recent heavy disaster experiences which happened many Asian countries like typhoon, earthquake, tsunami, flood were presented and participants shared how they quickly recover the water service for people at the Special Session. The forum grew very livelier. On the final day, “**Yokohama Forum Statement 2**” was declared by H.E. Ek Sonn Chan with approval of all participants. They promised every 2-years monitoring of their development process.

13 waterworks bureaus, organizations related water and many private companies from Japan participated. As a result, total participants through 4 days were 620 persons.

WaQuAC-NET plans to present several useful discussion results in the Forum on the future WaQuAC-NET Newsletters. (@end)

The 5th International Slow Sand & Alternative Biological Filtration Conference

Reported by Mr. Toshiki HORIE

The 5th International Slow Sand & Alternative Biological Filtration Conference was held in Nagoya from June 19 to 21, 2014. This conference had been held forth times in Europe and the United States since 1998. This 5th conference was the first to be held in Asia. Nagoya City Waterworks and Sewerage Bureau were in charge of an administration office. In this time, “Progress in slow sand and alternative bio filtration processes” was published by IWA. It was compiled under the supervision of Professor Nigel J.D. Graham, Imperial College London, UK, Professor M. Robin Collins, University of New Hampshire, USA and Emeritus Professor Nobutada NAKAMOTO, Shinshu University, Japan.

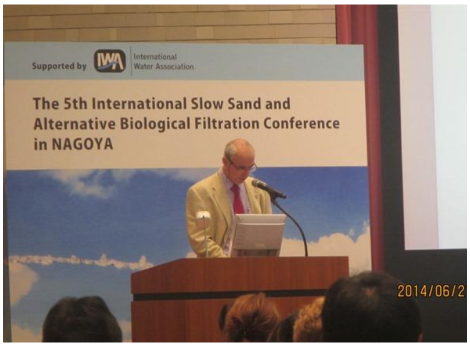
204 researchers, engineers, designers, operators and managers including 47 persons from overseas presented papers. NPOs, universities, institutes and etc. from UK, Germany, Holland, Israel, India, Bangladesh and USA participated in the conference. And also, waterworks bureaus which manage slow sand filtration system or biological activated carbon filtration, enterprises, universities and consultants and etc. participated from Japan.
Abstracts in this program were shown in 5ssabc HP. Refer to http://5ssabc.jp/doc/Abstracts_H260611.pdf

I also presented "Small Slow Sand Filter System for Rural Area in Bolivia”.
Many interesting presentations were introduced in the conference. Please see table in the next page. I picked up impressed presentations.

Professor Nigel J.D. Graham and Professor M. Robin Collins have studied slow sand filtration for many years. They had organized the first slow sand filtration conference in 1998. At that time, someone had thought that slow sand filtration was very old technology and it was not suitable for new water treatment plant.

However, Professor Graham had realized many participants in the first conference from many countries were very interested in slow sand filtration. Slow sand filtration system is used in large city for example, London, Paris and Zurich etc. In United States, it is used mainly in small city. In developing countries, slow sand filtration systems are used even in rural area.

Slow sand filtration has been studied long time. But biological activity in the filtration process are less well understood, because it is very complicated to understand biological activity that all creatures, group of organisms and virus interact with each other. Professor Graham said the study about biological activity in the filtration process, improvement of water treatment, efficiency of pre-treatment technology and filter media are needed from now on.



Professor Nigel J.D. Graham

In my opinion, it is very important to provide clean water inexpensively in developing countries. However, it was reported that slow sand filtration system was not maintained well and abandoned. Therefore, I think it is very interesting to analyze why slow sand filtration system was not maintained well and study how to manage the system and develop human resources. (@end)

Presentor	Content	Detail
Professor Nigel J.D. Graham Imperial College London, UK	･Biomass growth in the shumutzedecke in the sand bed	･Covered sand filtration system can curb biomass growth and make continuous run time longer than uncovered sand filtration system.
	･Fabric layers	･Slow sand filtration protected by surface layers of synthetic fabrics is capable of operating with significantly longer run times. And it is easy to clean the sand layer
	･Ozone pre-treatment	･When ozonation is employed prior to slow sand filtration, color which cannot be treated by usual slow sand filtration, dissolved organic carbon (DOC) and trihalomethane can be treated. And filter velocity can be increased up to from two to four times.
	･Granular Activated Carbon(GAC) in filtration layer.	･GAC placed as a sub-layer in sand media of slow sand filter. Then it is significantly effective to remove organic materials like a DOC. The Themes Water uses this method. Since filter velocity of slow sand filtration system is slow, even if the GAC layer is thin, it can treat chemical substance such as pesticide effectively.
	･Slow sand filtration modeling	･Modeling is very useful to understand treatment mechanism. It can be possible to predict timing of scratch sand layer and control. The data of model was compared with real slow sand filtration system. The precision of modeling got better than before. In the future, it can be available to use design, operation management and training of operating the slow sand filtration.
Professor M. Robin Collins University of New Hampshire, USA	･Pre-treatment for slow sand filtration	･Pre-treatment for slow sand filtration is sedimentation, rough filter etc. Since rough filter is adopted upward flow, it can be possible to clean the filter by open lower part valve.
	･Riverbank filtration	･The vertical well is installed near the river (Louisiana State). Or cylindrical caisson is installed with collecting pipe (Kentucky State). It is important for those methods to be installed in proper place.
	･Maturing time of biomass growth	･It takes approximately 30 days to become mature during the summer when water temperature is high. On the other hand, it takes from 60 to 120 days during the winter.
	･Pilot project of slow sand filtration system	･Since there were few cases of slow sand filtration systems in the United States, it is necessary to conduct pilot project before constructing it. The study should be done for filter media, method of cleaning sand filter, pre-treatment.
	･Packaged type of slow sand filteration system	･It has been developed for small community. Pre-treatment adopts ozone or rough filtration. Actually, it is installed in Main State. More detail: http://www.unh.edu/wttac/engineer_training_program.htm
T.K.K Ngai Centre for Affordable Water and Sanitation Technology （NGO of CANADA)	･Performance of Biosand filter	･Specifications of sand filter for rural area where each household do not connects to water supply system in developing country ① Quantity of water :0.4L/hour, Easy maintenance, intermittent operation , Cost :$15-40 Raw water: Ground water, river, rain water Quality of raw water: Maximum under 50 NTU, If raw water is high turbidity, it is necessary to sediment the turbid matters in water first. http://biosandfilters.info/technical/biosand-filter-basics ･Removal rate of E-coli is more than 90 percent. ② Application examples in the developing countries (19 countries) ･This system is very effective to treat E-coli and turbidity. However, it was abandoned in some cases. Therefore, those cases were analyzed. The causes of those cases were insufficient training for maintenance, contamination of treated water and high filter velocity and so on. Therefore, CWWS enhances training program for maintenance and increase best practice.

The 6th General Meeting of Kyushu Branch

Reported by Mr. Hiroshi SASAYAMA (JWWA)

The 6th general meeting of Kyushu branch was held in Fukuoka city on July 27, 2014. Participants were Mr. Nakashima, the branch leader, Mr. Oda, Mr. Kagata, Mr. Goto and Mr. Akaishi from the branch, Mr. Nakamura as an observer, Ms. Yamamoto, Ms. Yariuchi and I from Tokyo, totally 9 persons.

Ms. Yamamoto, the representative of WaQuAC-Net, reported the activities in the last year and the plan, including activities already done, of this year.

Mr. Oda reported activity in Fiji. He ardently showed us common problems of islands nations, outline of Water Authority of Fiji and problems in Fiji. It was more interesting and impressive with talking by himself even though he had already reported this subject in the newsletter Vol. 20. http://www.waquac.net/english/pdf/newsletter201402_en.pdf

Participants asked him many questions on size of treatment plants, cause of higher leakage in pipeline, etc. Fukuoka Waterworks Bureau will carry out a grass-root project in Fiji following the activity of Mr. Oda. He and Mr. Goto visited Fiji as the survey mission in April, 2014. And they will visit Fiji again to fix the detail of the project activity in October. Mr. Goto asked participants "What personnel should be selected as counterparts of the project?" Some participants, who have experience of such projects, answered "counterparts should be a decision maker, the responsible person of technical part, persons who know actual condition of fields, etc."

We had exciting discussion on this matter, but unluckily we could not conclude because of restricted time.

I could join the meeting of Kyushu branch smoothly even though it was the first time, because most of members of Kyushu branch are my friends. And coming to Fukuoka became familiar for me since I was employed at Japan Water Works Association April, 2014. I found coming to Fukuoka was very easy and gave me happiness with my old friends. I will have more discussion on international cooperation with them next time. (@end)

Back from left: Akaishi, Kagata, Sasayama, Yamamoto, Nakamura, Oda
Front from left: Goto, Nakashima, Yariuchi

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5th Anniversary of WaQuAC-NET

Results: Survey of Japanese Members

Reported by Ms. Mina YARIUCHI (WaQuAC-NET)

WaQuAC-NET was established in December 2008. On the occasion of 5 years anniversary, we conducted questionnaire survey to our Japanese members by e-mail in April and May 2014. The questionnaire was answered by 31 members out of 58. Here, I make a brief report on summary of the results.

Q1. How often read the newsletters?

More than 80 % of the WaQUAC-NET Members who answered questionnaire read the newsletters "every time" or "almost every time".

Q2. Interested fields?

Water quality and water treatment receive high interest of many members, which matches also WaQuAC-NET's main concerns. Additionally, it is found that many members had been interested in information on water supply in developing countries.

Q3. Interested articles?

The members have highest concerns on information on developing countries including project reports, visit reports; and moreover, Q&A and Special Topics draw attentions of many members as well.

The answers of Q2 and Q3 can explain that many members have much interest in information on water supply in developing countries.

Q4. Interested recent Q&A articles?

Though Q&A page has treated various technical fields, members show their wide range of interests.

Q5. Request/idea for topic of newsletter

There were many voices to request “information on water supply in developing countries”, “reports from foreign countries”. Some members gave ideas on specific technical subjects as well.

Q6. Request for future activities

Many opinions were raised to improve quality of our activities. In particular, many members have strong concerns to strengthen ties and communications among members in Japan and foreign countries.

Q7. Ideas to be involved in WaQuAC-NET activities?

Because WaQuAC-NET is run by voluntary contributions, some members answered “too busy to join the activities”. Some offered support as resource persons of the activities and to translate newsletters.

Conclusions

Do you know what the name WaQuAC-NET comes from? It stands for Water Quality Asian Cooperation Network; aiming at providing occasions for exchanging information to improve water quality in Asia. It is very impressive that the survey revealed that many members have interests in water quality, water treatment and water supply in foreign countries, which matches our concern.

For our future activities, we got many suggestions for enhancing ties and network among members not only of Japanese but of foreign countries; WaQuAC-NET’s strong point was confirmed.

Opinions and requests collected through this survey were quite useful and significant to consider future activities. We really appreciate the contributions and involvement of the members. (@end)

Introduction of New Members

- ○ Ms. Siti Zainab Lubis (Indonesia)
- ○ Ms. Fauzil Husni (Indonesia)
- ○ Mr. Satoshi Inoue (Japan)
- ○ Ms. Emiko Tsuji (Japan)
- ○ Mr.Shigeru Ando (Japan)
- ○ Mr. Takehiko Nakayama (Japan)
- ○ Mr. Kenichi Umeyama (Japan)

◎ We welcome new members anytime◎
Please contact us

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Next Activity

October	Meeting no.9 “report of biological survey in Thailand”
November	Meeting no.10 “Asian Water Supply & African one”
November	Newsletter vol.23 (in JPN)
December	Newsletter vol.23 (in ENG)