Final report for GSGES Short-term Program
Kyoto University, Japan

24th September, 2015

Outlines

- Self introduction
- Research topic in Mahidol University
- Activities during stay in Kyoto
- Kyoto life: Foods, travelling, festivals
- Benefits and difficulty of studying in Kyoto University
- Acknowledgement

MAHIDOL UNIVERSITY
Wisdom of the Land

Introduction

Name	:	Chanidaporn Hongkachok
Country	:	Thailand
Duration time in Japan	:	6 months (2nd April- 29th September, 2015)
Affiliation	:	GSGES
Supervisors in Kyoto	:	Prof. Shigeo FUJII and Assoc. Prof. Shuhei TANAKA
Current study topic	:	Study on Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) in groundwater in Thailand

Research topic in Mahidol University

Topic : Study on Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) in groundwater in Thailand

Objectives :

1. To optimize PFOS and PFOA analytical methods for groundwater samples
2. To investigate PFOS and PFOA concentrations in groundwater
3. To specify the potential sources of contaminations

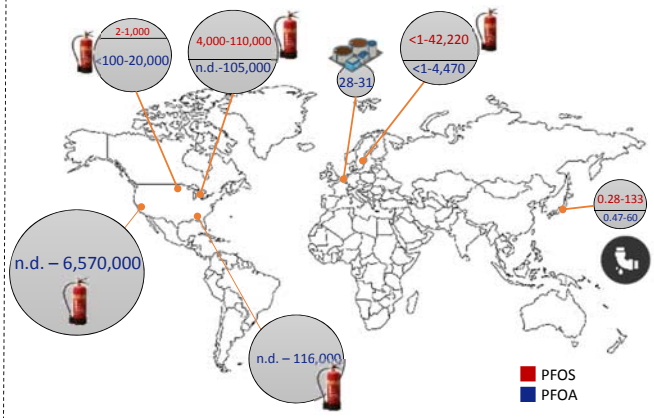
Fire extinguisher

Food packaging

Protective coating

PFCs related products (Brooke *et al.*, 2004)

PFOS **PFOA**



PFOS and PFOA levels in groundwater around the world (ng/L)

PFCs regulations

2000

PFCs have been firstly concerned by 3M Company

2002

U.S. EPA issued two Significant New Use Rules (SNURs) under the Toxic Substance Control Act (TSCA) to restrict the return of 88 PFOS-related chemicals

2006

U.S. EPA issued PFOA stewardship program 2010/1015.

The German Drinking Water Commission (TWK) set a health-based guide value for safe lifelong exposure at 0.3 µg/L

2007

U.S. EPA finalized a SNUR on 183 PFAs chemicals believed to no longer manufactured (including imported) or used in the United States

2009

U.S. EPA set short-term provisional health advisory values for PFOA and PFOS of 0.4 and 0.2 µg/L, respectively

PFOS, its salt were added to Persistent Organic Pollutants (POPs) in Stockholm Convention Annex B

Minnesota Department of Health (MDH) has set PFOS and PFOA levels in drinking water at 0.3 µg/L.

2015

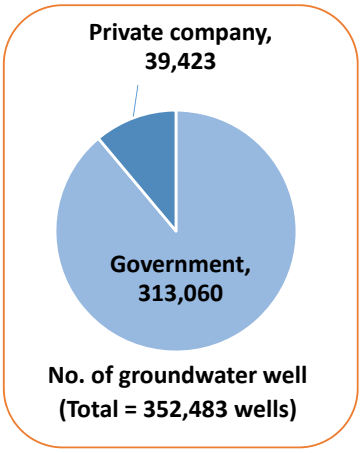
U.S. EPA proposed a SNUR under the Toxic Substances Control Act to require manufacturers to notify EPA at least 90 days before starting or resuming new uses of these chemicals in any products

Present

No regulation related to PFCs in Thailand

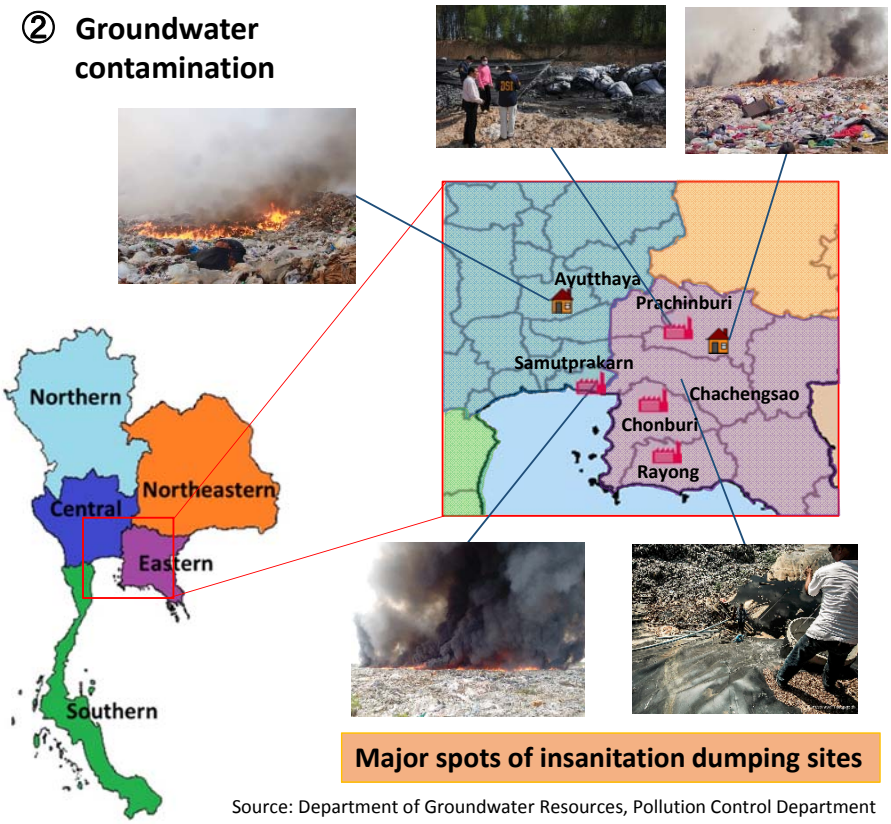
Why I focus on groundwater in Thailand ?

① Groundwater consumption



>70% served for domestic consumption

② Groundwater contamination



Major spots of insanitation dumping sites

Source: Department of Groundwater Resources, Pollution Control Department

Activities during stay in Kyoto

Apr → May → Jun → Jul → Aug → Sep

1. Attendance of 6 classes (10 credits in total)
2. Research proposal has been written and already submitted to Thai supervisor
   - Background information and statement of problems
   - Literature reviews
   - Materials and methods
3. Field trip at Osaka
4. Field trip at Wakayama
5. Surveyed at Shiga prefecture
6. Studied about PFCs lab work procedure
7. Lab trip at Shirahama
8. Enjoy eating Japanese foods and traveling in Kyoto and surrounded areas

Activities and outcomes

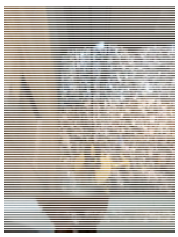
Activities	Outcomes
Attendance of six classes	- I learned and obtained new knowledge - I had new friends from several countries

Activities	Outcomes
Writing research proposal	- Research proposal has been written and already submitted to Thai supervisor • Background information and statement of problems • Literature reviews • Materials and methods

Activities and outcomes

Activities	Outcomes
Field trip at Osaka ✓ Murano water treatment plant ✓ Hirakata incineration plant	- I was excited to see new and high performance technologies - I learned about water treatment and incineration processes

Murano water treatment plant



Hirakata incineration plant

Activities	Outcomes
Field trip at Wakayama	- I learned about the local knowledge - I enjoyed plum picking - I learned how to make umeboshi and ume juice

Plum picking

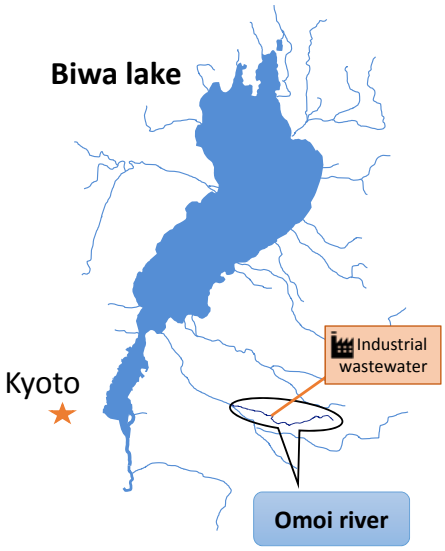
Activities and outcomes

Activities

- Conducted a survey at Omoi River, Shiga prefecture on August, 10th

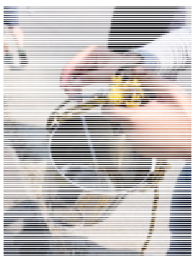
Outcomes

- I can apply these techniques for my research



1. Rinsed a container with water sample

2. Filled bottle with a sample



3. Measured a temperature, pH, and conductivity

4. Kept samples in cooler box and brought to the laboratory

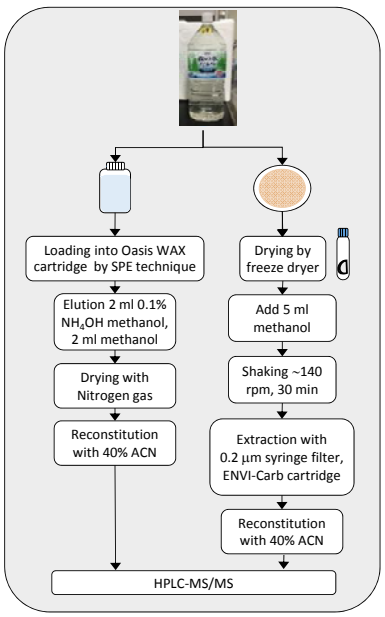
Activities and outcomes

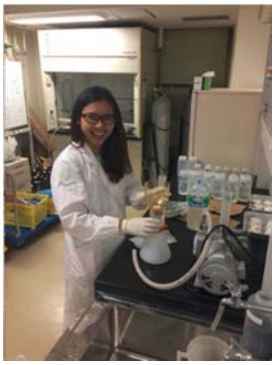
Activities

- Analyzed PFCs from the collected sample

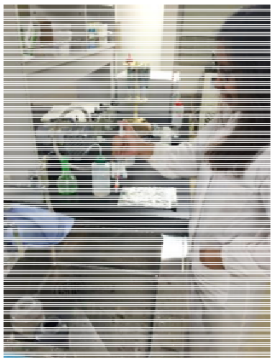
Outcomes

- I understood PFCs pre-treatment and analytical methods
- I understood how to use equipment and instruments
- I can apply these procedure for my research

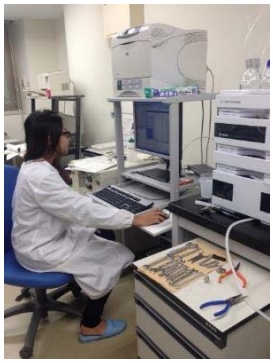




Filtered samples

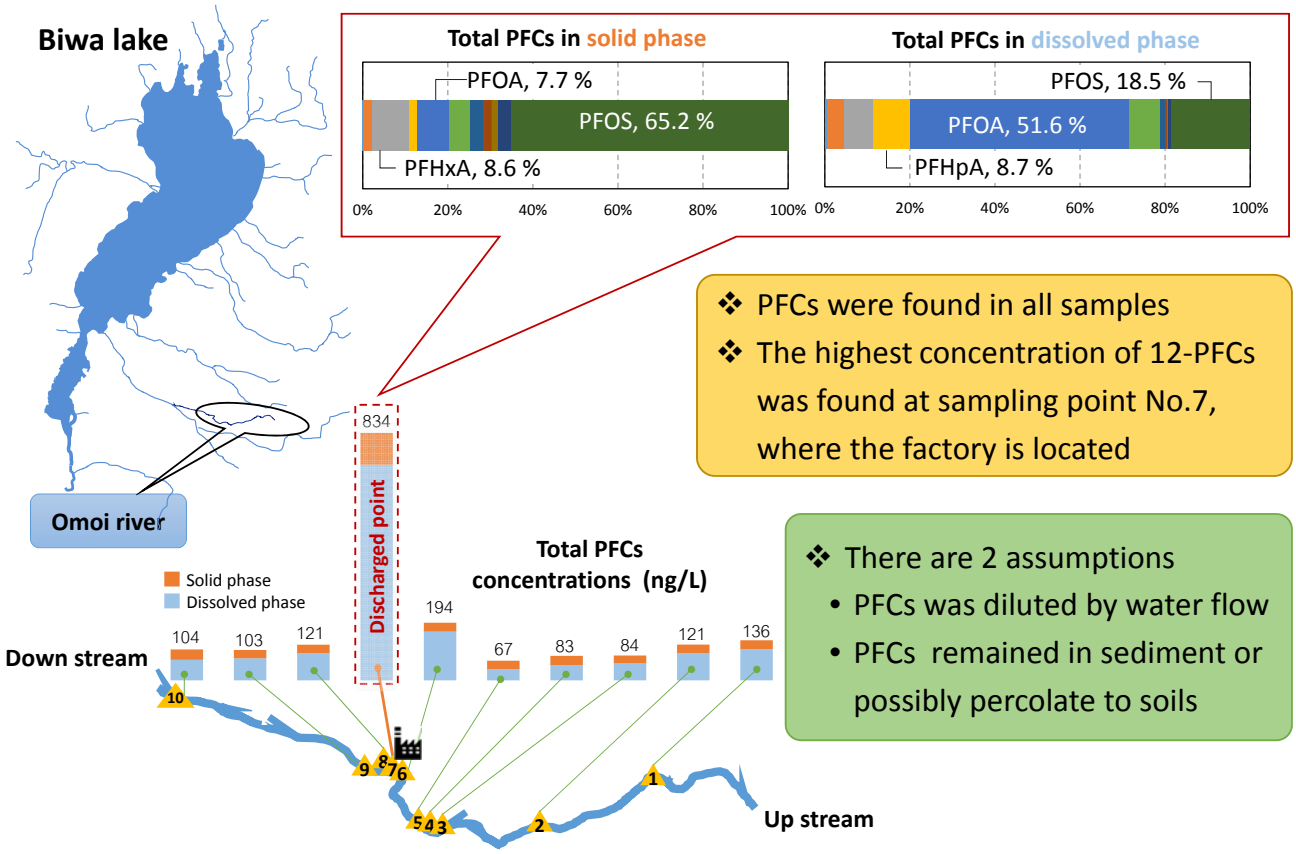


PFCs pre-treatment



HPLC-MS/MS analysis

Activities and outcomes: Results and discussion

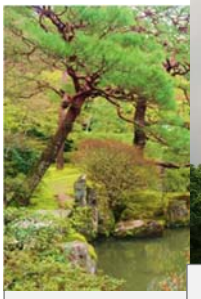


- PFCs were found in all samples
- The highest concentration of 12-PFCs was found at sampling point No.7, where the factory is located

- There are 2 assumptions
  - PFCs was diluted by water flow
  - PFCs remained in sediment or possibly percolate to soils

Kyoto life: Foods

Kyoto life: Travelling



Ginkakuji Temple

Osaka Cast

ukan Aquarium

Kinkakuji Temple

Fushimi Inari Shrine

Himeji Castle

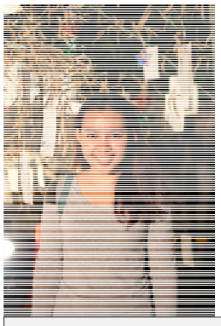
Ayashiyama

Kyoto life: Festivals

Gion Matsuri

Biwa Lake Fireworks

Shimogamo Shrine



Kyoto Tanabata

Benefits and difficulty of studying in Kyoto University

Benefits

- Gained new knowledge in environmental field
- Got a connection with Japanese teachers and friends for future study
- Learned to stay and worked with people who are from different countries
- Obtained advices from Japanese supervisor to do the research
- Learned Japanese culture e.g. festivals, foods, Japanese life
- Travelled to beautiful places in Kyoto and vicinity cities
- Had a good friendship

Difficulty

- Sometime, language is a bit difficult to communicate

Hanami party

BBQ party

Lab trip

Acknowledgement

I would like to express my thankfulness

- To Kyoto University for supporting the scholarship
- To my Japanese supervisors:
  Prof. Shigeo FUJII
  Assoc. Prof. Shuhei TANAKA

- To my academic supervisor:
  Assist. Prof. Suwanna Boontanon

- To **Ph.D Gaku MASUDA** for his helping and attention
- To the **members of Fujii laboratory** for their supports during stay in Kyoto University

Thank you very much for your kind attention