

REPORT

for the follow up project titled “**Capacity Building for Analysis and Reduction Measures of Persistent Organic Pollutants in Serbia**”

Experts from Japan visit, June 2015



Dr. Vladimir P. BEŠKOSKI

Prof. Dr. Takeshi NAKANO

June 2015,

BELGRADE, SERBIA

MEMBERS OF THE EXPERT GROUP
FROM JAPAN WHO VISITED SERBIA IN JUNE 2015

Experts from Japan (who visited Serbia under the auspices of the Project):

1. Prof. dr. Takeshi NAKANO, Osaka University - Research Center for Environmental Preservation and Hyogo Environmental Advancement Association
2. Dr. Yasuhiro KANDA, Hyogo Prefectural Institute of Environmental Sciences (director)
3. Dr. Katsuya YAMAMOTO, Hyogo Prefectural Institute of Environmental Sciences

Experts from Japan (invited by the organizers of the 7th Symposium: Chemistry and Environmental Protection, which will be held at Palić, from June 9-12, 2015):

1. Prof. dr. Hideyuki INUI, Kobe University, Research Center for Environmental Genomics (Plenary Lecturer)
2. Prof. dr. Kiwao KADOKAMI, Kitakyushu University (Invited Lecturer)
3. Ms. Aya IWABUCHI, Kobe University, Research Center for Environmental Genomics (Participant)

ACTIVITIES REALIZED IN SERBIA PRIOR ARRIVAL OF EXPERTS
FROM JAPAN

1. Meeting with the dean of the Faculty of Chemistry, University of Belgrade (FCUB) was scheduled for Monday, June 8, 2015 (10:00h).
2. Official letter of invitation for the Japanese experts lecture and workshop scheduled for Monday, June 8 at FCUB, was produced and distributed to more than 200 e-mail addresses of the colleagues working in the field of biochemistry, biotechnology, environmental chemistry from University of Belgrade, Pančevo city government officials and Industry. The official organizer of the lecture was Serbian Biochemical Society (Annex I).
3. Official letter of invitation for the round table meeting between Japan and Serbia, titled: Environmental protection without boundaries, scheduled for June 10 (15:00 - 17:00h), was produced and distributed to more than 300 e-mail addresses of government officials, researchers, members of the industry and high school representatives from Serbia (Annex II). The announcement is also included in Book of Abstracts of the 7th Symposium: Chemistry and Environmental Protection "Envirochem2015" (Annex III).
4. GCxGC/MS instrument was calibrated and prepared for joint analytical tests at FCUB.
5. Meeting with the Pančevo city government officials, members of the Project was scheduled for Saturday, June 13, 2015 (10:00h) in Pančevo city.

ACTIVITIES REALIZED IN SERBIA DURING VISIT OF EXPERTS FROM JAPAN

Friday, June 5, 2015

ACTIVITIES PLANNED

- Departure from Japan for Prof. KADOKAMI.

Saturday, June 6, 2015

ACTIVITIES PLANNED

- Arrival at Belgrade airport of Prof. KADOKAMI and departure to Novi Sad in organization of Prof. Biljana ŠKRBIĆ from University of Novi Sad.
- Departure from Osaka Kansai International Airport (Prof. NAKANO, Dr. KANDA, Dr. YAMAMOTO, Prof. INUI and Ms. IWABUCHI).

ACTIVITIES REALIZED

Prof. Kadokami arrived according to the plan, flight number TK 1081, 8:00h Saturday, June 6 and he was transferred to Novi Sad in organization of Prof. Biljana ŠKRBIĆ from University of Novi Sad.



Fig 1. Meeting with Prof. Kadokami at the Belgrade airport "Nikola Tesla".

Sunday, June 7, 2015 (8:00h-14:00h)

ACTIVITIES PLANNED

- Arrival at Belgrade (08:05h) and accommodation at hotel Majestic (<http://www.majestic.rs/en/>) (Prof. NAKANO, Dr. KANDA, Dr. YAMAMOTO, Prof. INUI and Ms. IWABUCHI).
- Acclimatization and adaptation from the flight.

ACTIVITIES REALIZED

- Colleagues from Japan had arrived according to the plan, Sunday, June 7. Prof. NAKANO, Dr. KANDA, Dr. YAMAMOTO, Prof. INUI and Ms. IWABUCHI, flight number TK 1081, 8:00h. All colleagues were accommodated in Hotel Majestic in Belgrade (Fig 1). Upon arrival, visit and inspection of the laboratory for GCxGC/MS at University of Belgrade, Faculty of Chemistry (FCUB) was realized (Fig 2).



Fig 1. Arrival of Prof. NAKANO, Dr. KANDA, Dr. YAMAMOTO, Prof. INUI and Ms. IWABUCHI at the Belgrade airport "Nikola Tesla".



Fig 2. Visit to FCUB and GCxGC/MS laboratory.

Monday, June 8, 2015(9:00h-18:00h)

ACTIVITIES PLANNED

- Meeting with the representatives of JICA Balkan office (9:00h)
- Visit to University of Belgrade, Faculty of Chemistry (10:30h)
- Lecture of Prof. INUI "Structural basis of species differences on metabolism and toxicity of polychlorinated biphenyls among mammals" (11:00-12:00h)
- Presentation of dr. BEŠKOSKI "Interaction of Perfluorinated Compounds with Cytochromes P450" (12:00-12:20)
- Workshop - quantitative/target PFASs analysis dr. YAMAMOTO (12:20-13h)
- Visit to laboratory "ANAHM". Discussion with stakeholders, governmental official, researchers and residents of Belgrade (14:00-18:00).

ACTIVITIES REALIZED

From 9:00h to 10:00h courtesy call in JICA Balkan office was held. At the meeting representatives of JICA Balkan office in Serbia Mr. Toshiya ABE, resident representative of the JICA Balkan Office and Mr. Ryuichi ITO welcomed colleagues from Japan Prof. NAKANO, Dr. KANDA, Dr. YAMAMOTO, Prof. INUI and Ms. IWABUCHI and Serbia Dr. Vladimir P. BEŠKOSKI (Fig 3). They all expressed mutual satisfaction regarding past and ongoing activities and future perspective of the grassroot Project and collaboration between institutions from Japan and Serbia. Prof. NAKANO had presented activities planned for this visit. Mr. ABE was interested in the Project and expanding possibilities of future collaboration. Furthermore, discussion about other JICA projects such as project of Akita University with Institute of Mining and Metallurgy from Bor, Serbia, as well as JICA project in Bosnia on construction and repairment of elementary school was held. JICA Balkan invited both JICA expert groups to introduce each other on Friday, Jun 12, 2015. On that occasion we met Mr. Jun HIRASHIMA from JICA Balkan office, Mr. Jin HIROSAWA, deputy director from JICA Tokyo, and Mr. Akira SUGIURA, architect from Tokyo. Also, since one fertilizer company from Japan exhibited interest for apatite ore from deposit Lisina, near Bosilegrad in Serbia, we confirm that joint effort will be given to find information on company or persons responsible for apatite mine.



Fig 3. Meeting in JICA Balkan office, (from left to right) Mr. Ito, Dr. Beškoski, Dr. Yamamoto, Mr. Abe, Prof. Nakano, Prof. Inui, Ms. Iwabuchi, Dr. Kanda.

Visit to FCUB. Meeting with the Dean of the FCUB, Prof. Branimir Jovančićević. Meeting with the representatives of the Project members from Serbia. 10:30h (Fig 4, 5).



Fig 4. Dean of the FCUB welcomes delegation from Japan.



Fig 5. Meeting with the Project members from Serbia at FCUB.

Workshop at FCUB in organization of Serbian Biochemical Society (http://www.bds.org.rs/download/Lecture_Announcement_JICA.pdf) (Fig 6-9). (11:00-14:00h). The moderator was vice-president of Serbian Biochemical Society, Prof. dr. Marija Gavrović-Jankulović. Whithin this workshop, the following lectures were held:

- Prof. INUI "Structural basis of species differences on metabolism and toxicity of polychlorinated biphenyls among mammals"
- Dr. BEŠKOSKI "Interaction of Perfluorinated Compounds with Cytochromes P450"
- Dr. YAMAMOTO "Quantitative/target analysis of perfluorinated compounds"

Around 30 participants (researchers, government officials and representatives from the Pančevo Industry) attendant this workshop. Upon all presentations discussion was held.



Fig 6. Discussion with vice-president of Serbian Biochemical Society Prof. dr. Marija Gavrović-Jankulović



Fig 7. Lecture of Prof. Inui at FCUB



Fig 8. Lecture of Dr. Beškoski at FCUB

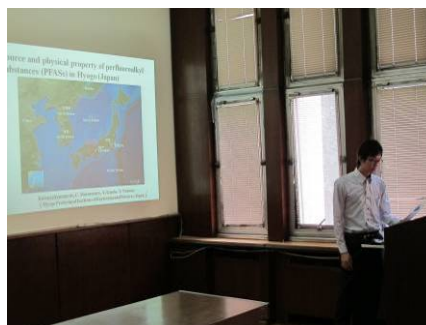


Fig 9. Lecture of Dr. Yamamoto at FCUB



Fig 10. Audience at the workshop



Fig. 11. Experts from Japan and representatives of Serbian Biochemical Society

At the end of the workshop experts from Japan visited laboratories of FCUB to discuss with PhD students and researchers (Fig 12). Previously, Prof. Makio TAKEDA, entomologist from Kobe University has expressed interest in collaboration with colleagues from Serbia on fall webworm. On meeting with entomologist from University of Belgrade dr. Slobodan Krnjajić it was discussed about possible collaboration and samples collection in Serbia (Fig 13). Another meeting about collaboration and collection of live specimens of fall webworm was with Dr. Gordana Grbić from University Educons from Novi Sad.



Fig 12. Meeting with PhD students and researchers of FCUB



Fig 13. Meeting with entomologist from Serbia dr. Slobodan Krnjajić

After FCUB, experts from Japan had visited laboratory "ANAHM", in order to discuss with researchers, representative residents of Belgrade and other stakeholders (15:00-18:00) (Fig 14-15).

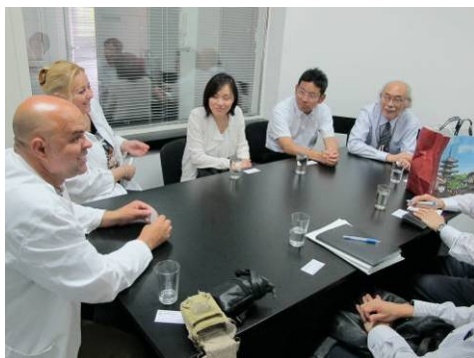


Fig 14. Meeting in laboratory "ANAHM" with Dr. Antonije ONJIA



Fig 15. Tour around laboratory "ANAHM"

Tuesday, June 9, 2015 (7:30h-18:00h)

ACTIVITIES PLANNED

- Departure from hotel "Majestic" (7:30h)
- Visit to Agricultural high school in Futog (9:00 - 12:00h). Discussion with high school students and professors oriented towards environmental education and eco-friendly projects similar to the environmental projects running in Agricultural high schools in Kansai area -

seed project, white stork, firefly. Education about harmful effects of POPs in the environment.

- Visit to University Novi Sad - laboratory of Prof. Ivana IVANČEV TUMBAS. Sharing information about the Project with researchers from University Novi Sad.
- Departure to Palić for conference "Envirochem2015" (16:00h)
- Arrival at Palić and accomodation at the hotel "Jezero" (18:00h)
- Registration, Hotel "Elite" (19:00 - 20:00h)

ACTIVITIES REALIZED

From 9:00 - 12:00h experts from Japan visited Agricultural high school in Futog, one of the largest agricultural high schools in Serbia. As planned, visit was followed with discussion with high school students and professors oriented towards environmental education and eco-friendly projects similar to the environmental projects running in Agricultural high schools in Kansai area - seed project, protection of white storks, and fireflies, as well as education about harmful effects of POPs in the environment. Upon meeting tour around high school property was organized (Fig 16-19).



Fig 16. Meeting with the principal of Agricultural high school in Futog, prof. Dušan GAGIĆ



Fig 17. Experts from Japan and representatives from Agricultural high school in Futog



Fig 18. Tour around high school property



Fig 19. Discussion with students from Agricultural high school in Futog

After agricultural high school in Futog in order to share information about the Project with researchers from University Novi Sad, visit to University Novi Sad - laboratory of Prof. Ivana IVANČEV TUMBAS was realized. Before tour around laboratories, meeting with Vice Dean of Faculty of Sciences University Novi Sad, Prof. dr. Milica PAVKOV HRVOJEVIĆ was held (Fig 20, 21).

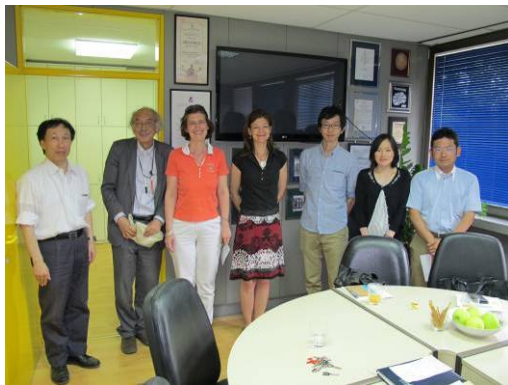


Fig 20. Meeting with Vice Dean Prof. dr. Milica PAVKOV HRVOJEVIĆ



Fig 21. Tour around laboratories of Faculty of Sciences University Novi Sad

After visit to University of Novi Sad, experts from Japan moved to Palić to attend 7th Symposium: Chemistry and Environmental Protection "Envirochem2015".

Wednesday, June 10, 2015 (9:00h-18:00h)

ACTIVITIES PLANNED

- Program of 7th Symposium: Chemistry and Environmental Protection
- Round table between Japan and Serbia Title: Environmental protection without boundaries (15:00 - 17:00h) (members of the Project from University of Belgrade, Pančevo city and Japan, local residence and all other participants of the "Envirochem2015" conference).
- Presentation "A Local Initiative for Managing Environmental Risk" Dr. Yasuhiro KANDA

ACTIVITIES REALIZED

Prof. Takeshi NAKANO, who was the member of the scientific committee, of symposium (Annex IV) presented his research paper titled "PCB monitoring using passive air sampler". Dr. Katsuya YAMAMOTO, presented his research paper titled "Source and physical property of perfluoroalkylsubstances (PFASs) in Hyogo (Japan)". Ms. Aya IWABUCHI presented her research paper titled "Comparison of transporting factors for persistent organic pollutants in *Cucurbitaceae* family". (Fig 22-25).



Fig 22. Opening ceremony of Envirochem2015



Fig 23. Prof. NAKANO presentation



Fig 24. Dr. YAMAMOTO presentation



Fig 25. Ms. IWABUCHI presentation

From 15:30-17:30h, round table between Japan and Serbia – Environmental protection without boundaries was held in Palić organized by members of the JICA grassroots project. Six experts from Japan and 28 representatives of Universities, local government and high schools from Serbia had join this round table. List of participants is given in Annex V. Prof. NAKANO and dr. BEŠKOSKI presented activities of JICA grassroots Project and Dr. KANDA gave presentation about environmental protection in Hyogo prefecture. Discussion was about analysis and reduction measures of Persistent Organic Pollutants (POPs) in Serbia, environment protection, new biotechnological methods which can be applied all over the world and about global transfer of pollutants as well as good will for future collaboration between researchers and research institutions from Japan and Serbia and high schools which could result in benefit for the residents of both countries. Prof. Stuart GIBB from Environmental Research Institute, University of the Highlands in United Kingdom, suggested that establishment of Center of excellence at Belgrade University for environmental chemistry may be one of our future goals which can result from collaboration between Japan and Serbia, and that researchers from all countries should apply for joint projects. Prof. Slavica RAŽIĆ from University of Belgrade, Faculty of Pharmacy suggested organization of joint conferences. Prof. NAKANO shared information about organization of PCB workshop that will be held in Kobe, Japan in 2016. He invited all researchers from Serbia to send papers and try to find funds to participate in this meeting. Prof. Ivana IVANČEV TUMBAS suggested that maybe some private companies could support our collaboration and research. One of the companies that we should address will be Kincho company from Osaka which has a long-term relationship and collaboration with Serbia. Furthermore, honorary consul in Osaka of the Republic of Serbia, is KINCHO's CEO, Mr. Naohide UYAMA. Discussion resulted in one document, titled "Palić Declaration on

Cooperation between researchers and research institutions from Japan and Serbia" (Annex VI). This document, signed by JICA Grassroot Project coordinators from Japan and Serbia, Prof. NAKANO and Dr. BEŠKOSKI, as well as Presidents of the Scientific and Organizing Committee of Envirochem2015, Prof. JOVANČIĆEVIĆ and TURK-SEKULIĆ, is included in the updated Book of Abstracts of the Symposium (http://www.envirochem.rs/res/EC2015_Book_of_Abstracts.pdf) (Fig 26-29).



Fig 26. Round table Japan-Serbia



Fig 27. Introduction of the participants



Fig 28. Discussion about Palić Declaration



Fig 29. Presentation of Dr. Kanda

Thursday, June 11, 2015 (9:00h-19:00h)

ACTIVITIES PLANNED

- Program of 7th Symposium: Chemistry and Environmental Protection
- Round table "Drinking water of Serbia", organized by the Serbian Academy of Arts and Sciences, Department Man and Environment (17:00 - 19:00h)

ACTIVITIES REALIZED

Prof. Hideyuki INUI, presented his research paper titled "Phytoremediation of persistent organic pollutants: Lesson from zucchini and pumpkin" as plenary lecturer. Prof. Kiwao KADOKAMI presented his research paper titled " Screening analysis of 1200 organic micro-pollutants in sewage treatment plants in Kitakyushu, Japan" as invited lecturer. Dr. Vladimir BEŠKOSKI presented his research paper titled "Biotransformation of Perfluorooctanesulfonate (PFOS) and Perfluorooctanoate (PFOA) by the Action of Microbial Community Isolated From

Polluted Environment - First Step Towards Successful Bioremediation". All presentations were followed with questions from the audience and discussion (Fig 30-33).



Fig 30. Prof. INUI presentation



Fig 31. Audience at Prof. INUI lecture



Fig 32. Prof. KADOKAMI presentation



Fig 33. Dr. BEŠKOSKI presentation

In the afternoon round table Drinking water of Serbia organized by Serbian Academy of Art and Science was held from 17:00 - 19:00h (Fig 34). Researchers gathered to discuss about quality and future of drinking water of Serbia.



Fig 34. Round table "Drinking water of Serbia"

Friday, June 12, 2015 (9:00h-20:00h)

ACTIVITIES PLANNED

- Program of 7th Symposium: Chemistry and Environmental Protection

- Return to Belgrade (Prof. NAKANO, Dr. KANDA, Dr. YAMAMOTO, Prof. INUI, Prof. KADOKAMI and Ms. IWABUCHI)
- Visit to Great Bačka Canal, (Serbian: Veliki bački kanal) environmental hot spot in Serbia
- Accommodation at the hotel "Majestic" (18:00h)

ACTIVITIES REALIZED

After closing ceremony of the 7th Symposium: Chemistry and Environmental Protection experts from Japan visited Great Bačka Canal, (Serbian: Veliki bački kanal) one of the environmental hot spot in Serbia (Fig 35, 36). According to available data the most polluted part is lokacated between cities of Kula and Crvenka.



Fig 35. Great Backa Canal near Kula city.



Fig 36. Delegation from Japan and FCUB in front of Great Backa Canal.

Saturday, June 13, 2015 (8:00h-15:00h)

ACTIVITIES PLANNED

- Meeting with members of the Project from Pančevo city and other stakeholders from Pančevo, local residence, governmental officials, representatives from industrial zone, state and private companies.
- Departure of Dr. YAMAMOTO and Dr. KANDA from Serbia.

ACTIVITIES REALIZED

In the premises of the Pančevo city administration building, meeting with the members of the Project from Pančevo city was held from 10:00-14:00h. On the meeting, participants of the training in Japan scheduled for 2015, from Pančevo (Vesna PETKOVIĆ BOROVNICA and Biljana ĐORDAN) had discussion with Project coordinators from Japan and Serbia. On previous meeting in February 2015 it was discussed about soil sampling in Pančevo and analysis of the sample extracts in Serbia and Japan. During April and May, sampling was conucted and samples

were collected from 29 locations around Pančevo city. Prof. NAKANO had presented preliminary results on sample analysis and concentration of Polychlorinated Biphenyl's (PCBs) and Polycyclic Aromatic Hydrocarbons (PAHs) in soil sampled around Pančevo city. Dr. Kanda gave presentation titled "Reintroduction of the Oriental White Stork and Hyogo Safe Brand of Agricultural Product" (Fig 37-40).



Fig 37. Meeting in Pančevo city



Fig 38. Dr. Kanda is giving presentation



Fig 39. Handover of signed copy of Palić Declaration



Fig 40. Joint photo after the meeting in Pančevo

In the afternoon, laboratory experiments using GCxGC/MS were continued. Dr. YAMAMOTO and Dr. KANDA had left Belgrade in the evening with the flight number TK 1084 (Fig 41).



Fig 41. Dr. KANDA and dr. YAMAMOTO are leaving Serbia

Sunday, June 14, 2015 (9:00h-13:00h)

ACTIVITIES PLANNED

- Departure from Serbia for Prof. INUI and Ms. IWABUCHI to Bulgaria and Prof. KADOKAMI to Japan

ACTIVITIES REALIZED

As planned, Prof. INUI and Ms. IWABUCHI had left Serbia with the flight number JU122. (Fig 42). Prof. Kadokami left Belgrade in the evening with the flight number TK 1084.



Fig 42. Prof. INUI and Ms. IWABUCHI are leaving Serbia

Monday, June 15, 2015 (8:00h-20:00h)

ACTIVITIES PLANNED

- GCxGC/MS analysis of soil samples from Pančevo city
- Departure from Serbia for Prof. NAKANO

ACTIVITIES REALIZED

Samples from Pančevo city were analyzed using GCxGC/MS. Furthermore, methods for analysis of PCBs, PAHs and other POPs chemicals were developed and installed on the instrument (Fig 43, 44). Prof. NAKANO installed new methods for POPs analysis on June 8, 13 and new methods for PCB congener-specific analysis on June 15. Prof. Kadokami installed new methods for unknown chemical analysis on June 13.



Fig 43. Prof. NAKANO installing new methods for POPs analysis



Fig 44. Dr. BEŠKOSKI analyzing samples from Pančevo

June 15, Prof. NAKANO and Dr. BEŠKOSKI had a meeting with Ms. Adrijana Barsi president of the Japan Serbia friendship association from Vršac to discuss about collaboration among schools from Serbia and Japan, environment preservation and healthy food production.

In the evening, Prof. NAKANO had left Belgrade with the flight number TK 1084 (Fig 45).



Fig 45. Departure of Prof. NAKANO from Serbia

Belgrade, June 21, 2015

Dr. Vladimir P. BEŠKOSKI, Assistant Professor, Faculty of Chemistry, University of Belgrade

Prof. dr. Takeshi NAKANO, Osaka University - Research Center for Environmental Preservation and Hyogo Environmental Advancement Association