

# REPORT

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

**Experts from Japan visit, September/October 2015**



**Dr. Vladimir P. BEŠKOSKI**

**Prof. Dr. Takeshi NAKANO**

**October 2015,**

**BELGRADE, SERBIA**

**MEMBERS OF THE EXPERT GROUP**  
**FROM JAPAN WHO VISITED SERBIA IN SEPT/OCT 2015**

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

1. Prof. dr. Takeshi NAKANO, Osaka University and Hyogo Environmental Advancement Association
2. Dr. Nobutoshi OHTSUKA, Center for Environmental Science in Saitama, Japan
3. Dr. Yuki HAGA, Hyogo Prefectural Institute of Environmental Sciences, Kobe, Japan

**ACTIVITIES REALIZED IN SERBIA PRIOR ARRIVAL OF EXPERTS**  
**FROM JAPAN**

1. Three meetings in Pancevo between members of the Project from Faculty of Chemistry, University of Belgrade (FCUB) and members from Pančevo city regarding workshop on safe usage of pesticides and packages disposal.
2. One meeting in Pančevo between members of the Project from FCUB and Pančevo city and representatives of PSS Institute Tamiš, regarding workshop.
3. Participation on the popular science event called Night of the Researchers was scheduled for Friday, September 25, 2015 (18:30 - 20:30).
4. Mini symposium at FCUB was scheduled for Tuesday, September 29, 2015 (10:00h) Official letter of invitation for the Japanese experts lectures, 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 (Annex I & Annex II).
5. Vcube meeting with GCxGC-MS expert from Japan Dr. Shunji Hashimoto from NIES was scheduled for Tuesday, September 29, 2015 (8:30h).
6. Meeting with the new dean of the FCUB Prof. dr. Ivan Gržetić was scheduled for Tuesday, September 29, 2015 (9:30h).
7. Official letter of invitation for the Japanese experts lecture and workshop scheduled for Wednesday, September 30, 2015 at PSS Institute Tamiš, was produced and distributed to more than 200 e-mail addresses of the individual farmers, farming communities and associations of Pancevo municipality. The official organizer of the workshop was FCUB, Pancevo city and PSS Institute Tamiš (Annex III & Annex IV).
8. Meeting with Mr. Aleksandar Vesić, Deputy Minister, Sector for the planning and management of the environment from the Ministry of Agriculture and Environmental Protection of Republic of Serbia, was scheduled for Thursday October 1, 2015(8:30-9:30) (Annex V).
9. Training at FCUB regarding usage of GCxGC-MS was completed in September 2015. Standards of the organochlorine pesticides, organophosphate pesticides, PAHs, PCBs were analyzed using GCxGC-MS and methods were developed.

10. Meeting of Japanese experts with the Pančevo city government officials, members of the Project was scheduled for Monday Sept. 28th, Wednesday Sept. 30th and Thursday Oct. 1st.

## **ACTIVITIES REALIZED IN SERBIA DURING VISIT OF EXPERTS FROM JAPAN**

Thursday, September 24, 2015

### **ACTIVITIES PLANNED**

- Departure from Japan for Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA.

Friday, September 25, 2015

### **ACTIVITIES PLANNED**

- Arrival at Belgrade airport of Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA and transportation to Hotel Majestic (8:00-10:00)
- Participation in the annual European event "Night of the researchers", discussion with high school students, university students and residents of Belgrade. Location: Belgrade City Library (<http://www.bgb.rs/english/home.html>)

### **ACTIVITIES REALIZED**

- Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA arrived according to the plan, flight number TK 1081, 8:00h, Friday, September 25 and they were transferred to Hotel Majestic in Belgrade (Fig. 1 & 2).



Fig. 1. Dr. Vladimir P. Beškoski, welcomed Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA at the hotel Majestic in Belgrade.



Fig. 2. Discussion about forthcoming activities during experts visit to Serbia.

- From 18:30 to 20:30h annual scientific European event "Night of the researchers" was held in Belgrade in Academic park, Faculties of natural sciences, museums and libraries. According to organizers, more than 30000 primary school, high school and university students visited this event. In front of FCUB Dr. Vladimir P. BEŠKOSKI had organized video conference with his colleagues who live in Germany, Nederland, USA and Brazil to present life of the scientist. Experts from Japan had shared their life experience with students. Discussion about environment protection prevailed (Fig. 3-6).



Fig. 3. Audience at the Belgrade City Library.



Fig. 4. Moderator of this event, Dr. Vladimir P. BEŠKOSKI with his daughter Dijana V. BEŠKOSKI.



Fig. 5. Prof. Takeshi NAKANO is giving a talk in front of students.

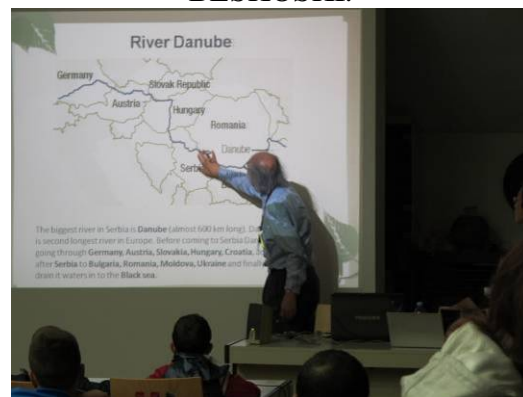


Fig. 6. Discussion about protection of River Danube.

Saturday, Sep. 26, 2015

### ACTIVITIES PLANNED

- PCBs analysis using GCxGC-MS (FCUB, Belgrade)
- Fuel oil hydrocarbons analysis using GCxGC-MS (FCUB, Belgrade)
- Pesticide analysis using GCxGC-MS (FCUB, Belgrade)

## ACTIVITIES REALIZED

During Saturday Sep. 26 and Sunday Sep. 27, analysis of Polychlorinated biphenyls (PCBs) fuel oil hydrocarbons analysis and organochlorine and organophosphate pesticides using GCxGC-MS at FCUB, were conducted. GCxGC-MS Instrument was in excellent working conditions and good quality chromatograms were obtained (Fig. 7 & 8).



Fig. 7. Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA at the FCUB, GCxGC-MS laboratory.



Fig. 8. Analysis of PCBs, fuel oil hydrocarbons and pesticide analysis using GCxGC-MS at FCUB.

Sunday, Sep. 27, 2015

## ACTIVITIES PLANNED

- PCBs analysis using GCxGC-MS (FCUB, Belgrade)
- Fuel oil hydrocarbons analysis using GCxGC-MS (FCUB, Belgrade)
- Pesticide analysis using GCxGC-MS (FCUB, Belgrade)

## ACTIVITIES REALIZED

Besides analysis of PCBs, fuel oil hydrocarbons, organochlorine and organophosphate pesticides, analysis of aromatic fraction of fuel oil hydrocarbons especially Polycyclic Aromatic Hydrocarbons (PAHs) were conducted (Fig. 9 & 10).

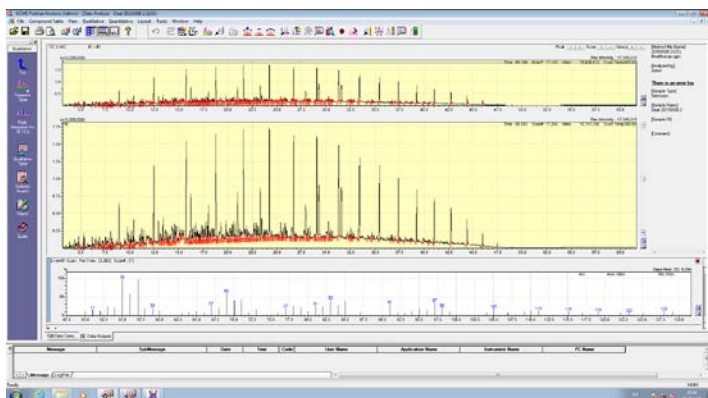


Fig. 9. One dimensional gas chromatogram of fuel oil hydrocarbons.

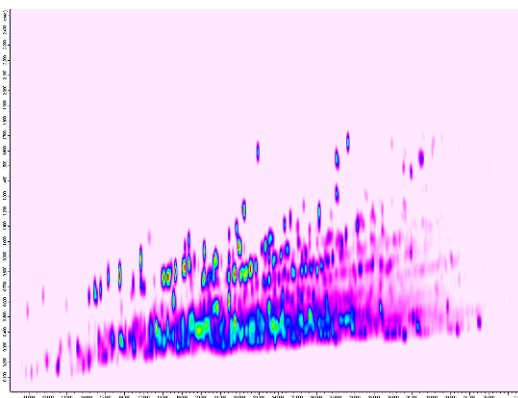


Fig. 10. Two dimension gas chromatogram of aromatic fraction of fuel oil hydrocarbons.

Monday, Sep. 28, 2015

### ACTIVITIES PLANNED

- Meeting with the representatives of JICA Balkan office (10:00h) (Belgrade)
- Meeting with members of the project from FCUB (13:00) (Prof. Vrvic) (Belgrade)
- Meeting with members of the Project from Pancevo city (16:00-18:00) (Pancevo)

### ACTIVITIES REALIZED

From 10:00h to 11:00h courtesy call in JICA Balkan office was held. At the meeting representative of JICA Balkan office in Serbia Mr. Anzai RYOHEI welcomed colleagues from Japan Prof. NAKANO, Dr. NOBUTOSHI and Dr. HAGA and Serbia Dr. Vladimir P. BEŠKOSKI (Fig 11). 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.



Fig. 11. Meeting in JICA Balkan office with Mr. ANZAI.

After meeting in JICA, experts from Japan had moved to FCUB to attend meeting with Prof. Miroslav M. VRVIĆ JICA participant in 2015 and other members of the JICA grassroots project from FCUB. In the afternoon experts from Japan had moved to Pančevo city (Fig. 12) for the meeting and discussion with members of the JICA grassroots project from Pančevo (Fig. 13).



Fig. 12. In front of Pančevo city hall, (from left to right) Dr. OHTSUKA, Dr. HAGA, Prof. NAKANO, Dr. BEŠKOSKI.



Fig. 13. Meeting with Mrs. Vesna PETKOVIĆ-BOROVNICA from Pančevo city, participant in JICA training in 2015.

Tuesday, Sep. 29, 2015

### ACTIVITIES PLANNED

- Vcube meeting with Dr. Hashimoto. Discussion on GCxGC data (8:30-9:30h) (FCUB, Belgrade)
- Meeting with Prof. Ivan Gržetić, new dean of FCUB, Prof. Jovančićević former dean (9:30-10:00) (FCUB, Belgrade)
- Mini symposium at FCUB (10:00-13:00h)
  1. **Dr. Nobutoshi OHTSUKA**, Center for Environmental Science in Saitama, Japan "Occurrence of neonicotinoid insecticides in river water in Saitama prefecture, Japan".
  2. **Dr. Yuki HAGA**, Hyogo Prefectural Institute of Environmental Sciences, Kobe, Japan "Measurement of OH-PCBs in PCB transport worker's urine for a safety check".
  3. **Prof. Dr. Takeshi NAKANO**, Research Center for Environmental Preservation, Osaka University, Japan "Estimation of polychlorinated biphenyl sources in environmental samples considering unidentified sources".

- Meeting with members of the project from FCUB (14:00) (Prof. Jovančičević) (Belgrade)
- PAHs analysis using GCxGC-MS (15:00-18:00) (FCUB, Belgrade)
- Visit to Institute of Physics (18:00-20:00)

### ACTIVITIES REALIZED

On the v-cube meeting from 8:30-9:30h with Dr. Shunji HASHIMOTO from National Institute for Environmental Studies (NIES), Japan, discussion about software for analysis of GCxGC data prevailed (Fig. 14). The meeting was started with discussion between Prof. NAKANO and Dr. HASHIMOTO. Later Miss Aleksandra DJURIC from FCUB and Dr. BEŠKOSKI joined. Dr. HASHIMOTO suggested that he is using GCImage instead of ChromSquare which we have already installed. Using GCImage software analysis of chromatograms acquired through selected ion monitoring mode (SIM) can be analyze more detailed. After discussion with Dr. HASHIMOTO, we successfully completed data processing of SIM data in 2D chromatogram. Real time guidance to understand usage of GCImage software and it application for 2D SIM data analysis was very useful.

After v-cube meeting, courtesy call with new dean of FCUB Prof. Ivan Gržetić, and former dean Prof. Jovančičević were organized (Fig. 15). Both former and new dean had expressed their satisfaction with realization of this Project, ongoing and future activities. On the meeting future steps in collaboration were also discussed.



Fig. 14. V-cube meeting with Dr. Shunji HASHIMOTO from NIES.



Fig. 15. Meeting with the new dean of FCUB, Prof. dr. Ivan GRŽETIĆ (in the middle) and former dean Prof. JOVANČIĆEVIĆ (right).

From 10:00h, Mini symposium was held at FCUB in organization of JICA grassroot Project. (Fig 16-17). The moderator was Dr. BEŠKOSKI, Project coordinator for Serbia. Around 30 participants (researchers, students and government officials from Serbian Environmental Protection Agency) attendant this workshop. Upon all presentations discussion was held. Official invitation disseminated before arrival of experts from Japan is given in Annex I and Annex II.





Fig. 16. Dr. OHTSUKA is giving lecture at mini symposium at FCUB.



Fig. 17. Joint photo after mini symposium.



Fig. 18. Lunch with former dean of FCUB Prof. JOVANČIĆEVIĆ.



Fig. 19. Meeting with Mr. Zoran STOJANOVIĆ, expert from Serbian Environmental Protection Agency.

After mini symposium, meeting with Prof. JOVANČIĆEVIĆ was organized (Fig. 18). On that meeting, the dominant subject was realization of his action plan. Prof. JOVANČIĆEVIĆ informed Prof. NAKANO that recently he gave one interview to daily newspaper POLITIKA about his experience from Japan (<http://www.politika.rs/rubrike/Srbija/Najvece-nevolje-s-vazduhom-imaju-Uzice-Valjevo-i-Loznica.sr.html>) (Annex VI).

Next meeting was with Mr. Zoran STOJANOVIĆ, expert from Serbian Environmental Protection Agency who informed experts from Japan about his activities in the Agency and possibilities for using data acquired through JICA grassroot Project about environmental situation in Pančevo for the benefit of the residents of that part of Serbia (Fig. 19). He also shared information about other regions in Serbia, hot spots and level of contamination.

In the afternoon visit to Institute of Physics of the Belgrade University (IPUB) was conducted. Researchers from the IPUB demonstrated work on supercomputer called "Paradox", which is the most powerful computer in the Balkan area (Fig. 20-21).



Fig. 20. Visit to Institute of Physics of the Belgrade University.



Fig. 21. Joint photo in front of supercomputer called "Paradox".

Wednesday, Sep. 30, 2015

### ACTIVITIES PLANNED

- Meeting with members of the Project from Pančevo city (09:00-10:00) (Pančevo)
- WORKSHOP AT INSTITUTE TAMIS IN PANCEVO CITY. (10:00-15:00) (Pančevo)
  - Opening ceremony and welcome speech of representative of the city of Pančevo and organizers.
  - Mrs. Maja SUDIMAC, Graduate Engineer plant protection, PSS Institute Tamiš Ltd., "Pesticides - classification, formulation, declarations and guidelines for the application and summary of training program for the safe application of pesticides".
  - Dr. Nobutoshi OHTSUKA, Center for Environmental Science in Saitama, Japan "Occurrence of neonicotinoid insecticides in river water in Saitama prefecture, Japan".
  - Dr. Yuki HAGA, Hyogo Prefectural Institute of Environmental Sciences, Kobe, Japan "Measurement of OH-PCBs in PCB transport worker's urine for a safety check".
  - Prof. Dr. Takeshi NAKANO, Research Center for Environmental Preservation, Osaka University, Japan "Pesticide monitoring and pest extermination".

- Mr. Nikola ŠKRBIĆ, Graduate Engineer agricultural machinery, PSS Institute Tamiš Ltd., "Personal protective equipment and equipment for the proper distribution of pesticides".
- Visit to Pančevo High School of Economy (15:00-17:00)

### **ACTIVITIES REALIZED**

Before workshop, meeting with members of the Project from Pančevo city were organized. Prof. NAKANO had distributed pamphlets used in Japan for distribution among farmers and students. Similar pamphlets should be produced within action plan of Mrs. Biljana DJORDAN (Fig. 22-23). The dominant topic on pamphlets are protection of the honey bees and safe application of pesticides as well as safe disposal of pesticide packages and material which was in contact with pesticides. Members of the meeting had agreed that students from agricultural high school should be involved in the process of pamphlets creation and production.



Fig. 22. Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA in front of PSS Institute Tamiš in Pančevo city.



Fig. 23. Prof. NAKANO is explaining to Mrs. Biljana DJORDAN, JICA participant in 2015 what he expect from her action plan.

Workshop at PSS Institute Tamiš started at 10:00h with opening speech of Mr. Vladimir DELJA, Pančevo city council member in charge for environmental protection and Dr. Vladimir BEŠKOSKI, JICA grassroot Project coordinator from Serbia (Fig. 24-25).



Fig. 24. Mr. Vladimir DELJA, Pančevo city council member, JICA participant in 2014, is opening workshop.



Fig. 25. Dr. BEŠKOSKI is talking about the importance of cooperation between Japan and Serbia.

Journalist from the Radio Television Pančevo (RTP) followed the workshop and reportage from that event was emitted in the evening news and on the webpage of the RTP (<http://rtvpancevo.rs/Vesti/Lokal/strucnjaci-iz-japana-o-bezbednoj-primeni-pesticida.html>) and ([https://www.youtube.com/watch?feature=player\\_embedded&v=SjN2mAflpWw](https://www.youtube.com/watch?feature=player_embedded&v=SjN2mAflpWw)) (Annex VII).

On the workshop, more than 30 individual farmers and agricultural producers, as well as representatives of farming communities and associations of Pančevo municipality participated.

In total five lectures were given. At the end of the workshop farmers underlined that information about proper and safe disposal of pesticide packages and management of pesticide waste in Japan was the most important part (Fig. 26-31).



Fig. 26. Audience at the workshop.



Fig. 27. Mrs. Maja SUDIMAC from PSS Institute Tamiš is giving presentation at the workshop.



Fig. 28. Dr. OHTSUKA is giving presentation at the workshop.



Fig. 29. Dr. HAGA is giving presentation at the workshop.



Fig. 30. Prof. NAKANO is giving presentation at the workshop.



Fig. 31. Mrs. Nikola ŠKRBIĆ is giving presentation at the workshop.

Following the lectures, proper pesticide application was demonstrated.

At the end of this event, organizers of the workshop from FCUB, Pančevo city and PSS Institut Tamiš, agreed to sign Pančevo Declaration on Cooperation between researchers and research institutions from Japan and Serbia. The text was prepared at the end of the workshop and the signing ceremony was scheduled for day after. They agreed that:

1. The workshops on safe usage of pesticides and environment protection should continue.
2. Support in broadening the network to other research areas if interest is expressed by researchers from either side.
3. Education of the residents of Pančevo city will be broadened.
4. Pamphlets on safe usage of pesticides and safe disposal of packages will be produced.
5. Education of high school students ("Paja Marganović" School of Economy) from Pančevo on environmental protection will be realized in cooperation with high school Professors.
6. Organization of Webinars for collaboration and networking to achieve established goals.

After workshop, in the afternoon, Mr. Vladimir DELJA had organized meeting with students of Pančevo "Paja Marganović" High School of Economy. Students agreed that they would like to help in the process of making of pamphlets about environment protection.

Thursday, Oct. 1, 2015  
**ACTIVITIES PLANNED**

- Meeting with representative of the Ministry of Agriculture and Environmental Protection of Republic of Serbia (Mr. Aleksandar Vesić, Deputy Minister, Sector for the planning and management of the environment) (8:30-9:30) (Belgrade)
- Meeting with members of the Project from Pančevo city (12:00-14:00) (Pančevo)  
Discussion about next visit of Japanese experts. Production of pamphlets, preparing a document on the analysis of agricultural soil in Pančevo, organizing of the meeting with the residence of Pančevo city and members of the industrial zone in January.
- Visit to Faculty of Medicine, University of Belgrade (15:00-17:00) (Belgrade)

**ACTIVITIES REALIZED**

Courtesy call at the Ministry of Agriculture and Environmental Protection of Republic of Serbia was organized prior arrival of experts from Japan and invitation letter was send to Mr. Aleksandar Vesić, Deputy Minister (Annex V) (Fig. 32-33). At that meeting, Deputy Minister was informed about realization of JICA grassroot Project in Serbia and Japan and he generously offered a help from the Ministry in the form of coordination and information sharing. He expressed his satisfaction with this Project, especially since he was participant of one JICA training in 2004.



Fig. 32. Courtesy call at the Ministry of Agriculture and Environmental Protection of Republic of Serbia, (left side) Mr. Aleksandar Vesić, Deputy Minister.



Fig. 33. Joint photo after the meeting in the Ministry of Agriculture and Environmental Protection of Republic of Serbia.

From 12:00h, meeting in Pančevo city was held (Fig. 34-39). . On that meeting, members of the Project from Pančevo city, Mrs. Olga ŠIPOVAC, Mr. Vladimir DELJA, Mrs. Biljana DJORDAN, Mrs. Vesna PETKOVIĆ-BOROVNICA, also from PSS Institute TAMIŠ, Mr. Nikola ŠKORIĆ and Mrs. Maja SUDIMAC and representatives of the Agricultural Secretariat of the Pančevo city had discussion with Project coordinators from Japan and Serbia Prof. NAKANO and Dr. BEŠKOSKI. Discussion about next visit of Japanese experts in January, production of pamphlets, preparation of a document on the analysis of agricultural soil in Pančevo, organizing of the meeting with the residence of Pančevo city and members of the industrial zone in January were main topics. Translation was realized by Mr. Masahiro OTSUKA.



Fig. 34. Prof. NAKANO is exchanging gifts with Mr. Vladimir DELJA.



Fig. 35. Prof. NAKANO is exchanging gifts with Mrs. Olga ŠIPOVAC.



Fig. 36. Meeting in Pančevo city.



Fig. 37. Meeting in Pančevo city.



Fig. 38. Meeting in Pančevo city.



Fig. 39. Meeting in Pančevo city.

After meeting signing ceremony of Pančevo Declaration was organized (Fig. 40-43) (Annex VIII).



Fig. 40. Pančevo Declaration signing ceremony



Fig. 41. Pančevo Declaration signing ceremony



Fig. 42. Pančevo Declaration signing ceremony



Fig. 43. Pančevo Declaration signing ceremony



From 16:00h, visit to Faculty of Medicine, University of Belgrade (FMUB) was realized. Prof. Ivanka KARADŽIĆ and Dr. Lidija IZRAEL had presented activities of the Faculty (Fig. 44-45).



Fig. 44. Prof. KARADŽIĆ is presenting activities of her research group.

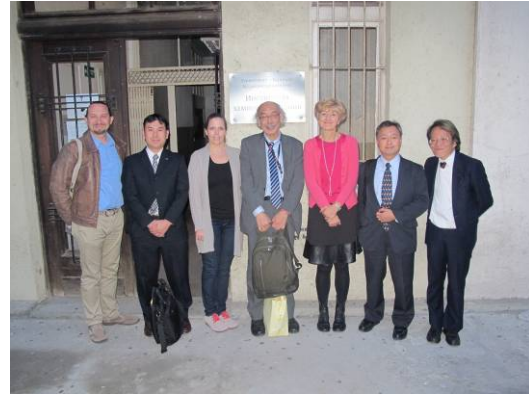


Fig. 45. Japanese experts and colleagues from Serbia in front of FMUB.

Friday, Oct. 2, 2015

#### **ACTIVITIES PLANNED**

- Visit to Futog Agricultural high school (Futog) (10:00-14:00) (Futog) (Taxi)
- Departure from Serbia (18:00) (Belgrade)

#### **ACTIVITIES REALIZED**

From 10:00 - 15:00h experts from Japan visited Agricultural High School with Boarding 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, as well as education about harmful effects of POPs in the environment. High school students had presented their school and upon meeting in the school's library, tour around high school property was organized (Fig. 46-51).



Fig. 46. Students are presenting their school.



Fig. 47. Joint photo with the school Principle.



Fig. 48. Visit to the stables in Futog school.



Fig. 49. Discussion with students and Professors.



Fig. 50. Souvenirs exchanging with school Principle Mr. Dušan GAGIĆ.



Fig. 51. Joint photo in front of school's cafeteria.

As planned, Prof. dr. Takeshi NAKANO, Dr. Nobutoshi OHTSUKA, and Dr. Yuki HAGA had left Serbia with the flight number TK 1084 (20:20h) from the airport "Nikola Tesla" in Belgrade.



Fig. 52. Prof. NAKANO, Dr. OHTSUKA, and Dr. HAGA are leaving Serbia.

Belgrade, October 2, 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