

FIU AAEES Student Chapter Attends National Lecture at UCF on Direct Potable Water Reuse

A new student organization of environmental engineers and scientists at FIU has been formed this Fall 2013 semester. The organization, known as the AAEES of FIU, is an official student chapter of the national organization of the American Academy of Environmental Engineers and Scientists (AAEES); AAEES is the lead professional organization for environmental engineers according to the Accreditation Board for Engineering and Technology (ABET). "AAEES of FIU's mission is to bring together like minded, passionate, and dedicated students for the purpose of educational enhancement, professional development, and community service," says club President, Andrew Speroterra. The group has already been very active since its initiation, recruiting members, drafting a constitution, holding weekly meetings, and planning and attending events.

Recently FIU's AAEES visited the University of Central Florida (UCF) campus in Orlando to attend a Kappe Lecture presented by Dr. George Tchobanoglous. Almost thirty FIU engineering students and faculty attended the lecture, making the long bus journey from Miami to Orlando and back on Friday, October 18, 2013. The trip was paid for in part by Dr. Laha's faculty development fund and in part by other CEE departmental funds.

The lecture was titled "Direct Potable Water Reuse: A Future Imperative." Increased population growth, urbanization and climate change pose significant challenges to public water supplies. One solution is the increased reuse of wastewater both indirectly and directly. Dr Tchobanoglous suggests that the cost associated with building and maintaining separate piping and storage systems for reclaimed waters is prohibitively expensive. He suggests that direct potable reuse (DPR) is most cost-effective and sustainable. During his presentation, Dr Tchobanoglous pointed out that there has been considerable direct reuse of wastewater occurring without much regulatory oversight for centuries, as downstream communities use river waters that have received sewer discharges from upstream communities. He mentioned two cases in point:

- The San Diego County Water Authority imports water from the Colorado River using a 240-mile aqueduct. However, not only has the prolonged drought resulted in much lower flow rates in the Colorado River, but also the water that reaches the county has severely impaired water quality (e.g., high salinity values, heavy metals, and other industrial and agricultural pollutants)
- The Trinity River that connects the cities of Dallas and Houston in Texas is used by both cities as their drinking water source as well as their discharge point for treated sewage. At certain times of the year, three quarters of the flow that reaches Houston has been reported to consist of wastewater from Dallas!

In both cases, direct reuse of treated sewage by the cities of San Diego and Houston would not only ensure greater sustainability, but would ultimately provide the communities with safer, better quality drinking water. Dr Tchobanoglous indicated that the technology to render sewage safe for drinking purposes exists and is reliable; that the impediments to direct reuse are public perception rather than technological. He suggested that concerns with emerging contaminants like pharmaceuticals and personal care products are exaggerated, and that membrane treatment (essentially employing

molecular sieving) can remove almost all contaminants. He also reminded us that successful advertising has created a false security about the bottled water that many people prefer; we do not really know much about the source of that water, and bottled water is not subject to as much regulatory oversight as public water supplies! DPR has been implemented in Windhoek, Namibia and in San Diego, California – both located in desert environments with chronic water scarcities. Dr Tchobanoglous left his audience with the idea that in the following decades the education of civil and environmental engineers would significantly change so that we move away from incremental changes at existing water/wastewater plants to more dramatic changes, that water and wastewater treatment facilities would no longer be treated as completely different entities, but would be built next to each other to facilitate direct reuse.

For those attending the talk the day began really early: with the departure time from the FIU Engineering Campus set at 6 a.m., we reached the UCF Campus in Orlando by 10:30 a.m. That gave us some time to meet with students and faculty from UCF, USF and UF as well as examine the student posters. The talk began at 11:30 a.m. and was followed by boxed lunches at 1 p.m. The FIU group left the UCF campus after lunch, and we were on the road over five hours to return to FIU after 7 p.m.

This event was just one of many that the AAEEES of FIU have planned for this semester. Among the upcoming activities planned by the young AAEEES chapter are attending the Florida Water Environment Association's "Water Festival" which will include a camping and spring river float trip and receiving volunteer surface water monitoring training from the UF-IFAS Project Lakewatch program. If you would like to know more about the AAEEES of FIU and/or would like join, doing so is very easy. Simply find them on OrgSync.com under AAEEES of FIU or send an email to AAEEESofFIU@gmail.com.





