

JSWE: An energetic platform for promoting communication and cooperation between China and Japan

Professor, Research Center for Eco-Environmental Sciences,
Chinese Academy of Sciences (中国科学院生态环境研究中心, 教授)
Dongbin Wei (魏 東斌)

With the recommendation from the Chinese Society for Environmental Sciences and the support of the JSWE-IDEA International Exchange Award, I attended the 50th Annual Conference of JSWE held in Tokushima from March 16–18, 2016. It is my great honour to be awarded, and I wonder to express my sincere thanks for all the support and help from both China and Japan sides.

My research field mainly focuses on the transformation mechanisms and risk assessment on the emerging pollutants during environmental processes, covering natural environmental process and artificial water treatment processes. The environment issues caused by emerging pollutants become more and more important not only in China, but also in all over the world. The research on their transformation behaviors and risk variation of these pollutants during environmental processes would be helpful for pollution control and environmental risk elimination.

During the annual conference, I gave a presentation entitled “Toxicity-directed fate and transformation of benzophenone-type UV filters in chlorination disinfection”. Benzophenone-type chemicals (abbreviated as BPs) are one of the primary components in the UV-filter family. The BPs have been frequently observed in the environment, showing high potentials to invade drinking water, swimming water, or wastewater reclamation treatment systems. The toxicity of two out of 14 BPs had significant increase after chlorination disinfection treatment. The UV-filter BP-4 (2-hydroxy-4-methoxybenzophenone-5-sulfonic acid) was targeted to reveal the possible mechanisms during water disinfection treatment with free available chlorine (FAC). It was found that BP-4 was rapidly exhausted within the first 5 min, and 14 products from free chlorine promoted BP-4 disinfection have been

disclosed. The possible transformation mechanisms include chlorine substitution, oxidation, ester hydrolysis, decarboxylation, and desulfonation. The model studies evidenced that some small molecules with high genotoxicity, such as chloroform and chlorinated benzoquinones, were generated in chlorination systems of BP-4 and some other BPs. More importantly, we have observed that the FAC-treated BP-4 aqueous solution might increase the genotoxic potentials due to the generation of chlorinated disinfection by-products. Especially, the toxicity-directed method has been proved to be a useful tool to screen the potential environmental risk of more emerging pollutants during chlorination disinfection treatment.

This is the fourth chance for me to attend annual conference of JSWE. When I studied in Yokohama National University as a COE fellow, I attended annual conferences in 2004, 2005 and 2006. After a ten-year absence, the 50th annual conference impressed me deeply once again. First, I met lots of old friends, and made many new friends from universities and companies. Second, every presenter and listener not only famous scientist but also student had comprehensive discussion and communication on science problems with the conscientious and careful attitude.

Finally, I would like to express my sincere thanks to JSWE organization for excellent arrangement of the 50th annual conference. I believe that this conference provided an energetic platform for every participant not only to learn knowledge, but also to advance communication and cooperation. I hope I can stand on this platform and contribute myself to promote more cooperation on environmental issues between China and Japan.