

AHW026-P06

Room:Convention Hall

Time:May 27 09:00-10:45

## Water pollution characteristics of mega-cities: seasonal variation, BOD sources and recovery process

Koki Onishi<sup>1\*</sup>, Shin-ichi Onodera<sup>1</sup>, Mitsuyo Saito<sup>2</sup>, Yuta Shimizu<sup>1</sup>

<sup>1</sup>Hiroshima University, <sup>2</sup>Ehime Univesity

Water samples were collected in the Ciliwung River, sewage and ponds on 25 - 26 April in 2010 under a low flow condition and 12 - 13 June in 2010 under a high flow condition after a storm flood. The spatial distribution of EC, DO, BOD and DOC in the Ciliwung River from mid-stream to downstream on 12 - 13 June, 2010 was shown in the figures (see the report). The EC and DO were measured by portable meters, BOD analyzed by PD PAL JAYA, and DOC analyzed in Hiroshima University. In the case of water with less suspended materials, such as the sewage or river water in downstream, the EC and BOD relationship was similar to the best-fit curve shown. On the other hand, BOD values were high and EC were low in water with suspended solid.

The relationship between BOD and DOC in river in Jakarta in June 2010 indicated that BOD values were mostly higher than DOC in June. This suggests that these water samples included the suspended solids of organic substances. The EC and DOC relationship in April was better than that in June. The water samples with suspended solids tended to have high DOC concentration. EC is normally related to total ion, and DOC is one of the main ions in case of organic polluted area. The good correlation between EC and DOC supports these properties. But in case of high suspended concentration, part of DOC includes unionized compounds.

Based on the preliminary results of this survey, the Survey team finally proposed a real time monitoring system which included a suspended solid sensor to the system. Good correlation between EC and DOC, and EC and BOD were confirmed in many cases including that from Japan. Based on these relationships, The Survey team could estimate BOD in sewage without suspended material. However, it is required to use the relationship between SS and BOD in case of high suspended concentration.

In the proposed system, the cost is one fifth of that of BOD and the sensor has high durability. The Survey team is confident that the proposed monitoring system for Indonesia would be effective.

Keywords: water pollution, river, mega-cities, BOD, dissolved nitrogen