



# WET2010

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## PROGRAM AND ABSTRACTS

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Global COE Program "Global Eco-Risk  
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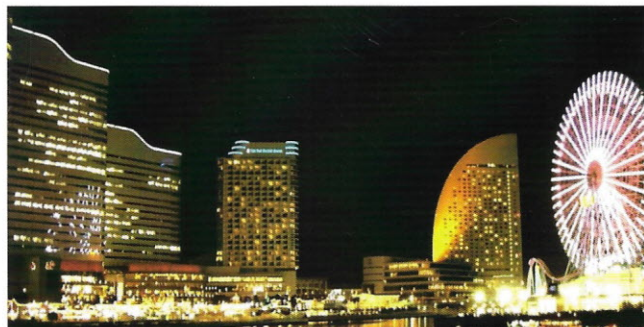
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Friday, June 25, Session 1B (25-1B)

(Oral: 13:30-14:30, Room B; Poster: 14:30-15:25, Hall) Chair: KURISU Futoshi  
25-1B-09

### **Estrone Removal Activity of Activated Sludge under Various Dissolved Oxygen Concentration Levels**

**Mohammed Cassim RIYAS\***, **Futoshi KURISU\*\***, **Ikuro KASUGA\***, **Hiroaki FURUMAI\*\***

*\*Department of Urban Engineering, The University of Tokyo, Japan*

*\*\*Research Center for Water Environment Technology, The University of Tokyo, Japan*

Estrone (E1) removal activity of activated sludge was investigated in batch experiments under various dissolved oxygen (DO) concentration levels. The activated sludge and wastewater samples were collected from a continuous flow lab-scale reactor treating actual municipal wastewater. The diluted activated sludge samples were pre-aerated for more than 12 hours, and then E1 was spiked to give a final concentration of 500 ng/L. The role of adsorption was studied separately by adding sodium azide. The results show a rapid elimination of E1 from the liquid phase under aerobic condition as more than 75% of the spiked E1 disappeared within 10 minutes regardless of DO concentrations, and almost all E1 was removed within 4 hours. On the other hand, a less removal rate was observed under anaerobic condition. Adsorption was not significant as less than 30% of the spiked estrone was adsorbed by sodium azide-inactivated sludge. It is more likely that the removal mechanism of E1 is uptake by active bacteria and subsequent biological degradation. Rapid E1 uptake process is favored under aerobic condition, regardless of DO concentration. Further investigation on pre-aeration condition showed that, pre-aerated sludge was able to eliminate E1 faster than non pre-aerated sludge.