Effect of Catchment Characteristic on Formation of Trihalomethane along the Kelani River in Sri Lanka.

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Kelani River is the fourth longest river in Sri Lanka which starts its journey from the Sri Pada Mountain range and meet the ocean at Colombo. In upper catchment area there are plenty of tea and rubber plantation land and in down catchment there are huge number of industrial zones. Therefore, it carries more Dissolved Organic Carbon (DOC), inorganic and suspended solids. In drinking Water Treatment Plants (WTPs), can be removed mainly Total solid. As a result of remaining DOC in filtered water Disinfection by Products (DBPs) such as Trihalomethane (THM) formed after the chlorination. THM is carcinogenic. Present study aimed to investigate the effects of catchment characteristic on THM formation along the Kelani river. Water samples were collected from the WTPs located at *Seethagangula*, *Hatton*, *Maskeliya*, *Morontota*, *Ruwanwella*, *Yatiyantota*, *Pugoda*, *Biyagama* and *Ambatale*. Four THM species, Trichloromethane, Bromodichloromethane, Dibromochlomethane and Tribromomethane were measured using Gas Chromatography (GC) system and finally Total THM (TTHM) were calculated. The lowest TTHM concentration was reported in *Maskeliya* (9.34 µg L^{-1}) WTP. Catchment area is mostly covered with tea plantation in *Maskeliya* area. The TTHM concentration at *Morontota* and *Ruwanwella* WTPs were 42.96 ±7.00 µg $L^{-1}$and 65.70 ± 16.12 µg L^{-1}, respectively. The main catchment characteristic of these area is rubber plantation. However, highest TTHM value of 67.19 ± 4.50 µg $L^{-1}$was reported in Biyagama WTP which is located in highly industrialized area. Even though both *Ambatale* and *Biyagama* WTPs are located very close, TTHM value of the *Ambatale* (21.33 ± 2.41) µg L^{-1}WTP is significantly lower than *Biyagama*. However, all the recorded TTHM values were below the United States Environmental Protection Agency (USEPA) maximum contamination level of 80 µg L^{-1}. Finally, it can be concluded that THM formation is lower in tea plantation area and high in industrialized area.

Keywords: Trihalomethane, Kelani river, Water treatment plant.