

Occurrence of Steroid Sex Hormone Progesterone in influent and effluent of Oxidation Pond and the river outlet of waste water treatment case study

Abstract

Background and Objective: This studied about the occurrence of Endocrine Disrupting Compound (EDC) in interest of steroid sex hormone progesterone excretion in the environment, that focusing on water resource in terms of effluent and influent of the waste water treatment into the outlet river and environment.

Materials and Methods: A method called dispersive liquid-liquid micro extraction with solidification of floating organic drop followed by High Performance Liquid Chromatography (HPLC) was used for determination of progesterone. The water sample was obtained through grab sample from the influent and effluent of waste water treatment-oxidation pond and the outlet river (Kalansanan river) where the effluent was discharged.

Results: Based on the result obtained it is found that there were few detections and occurrences of steroid sex hormone progesterone in the study with detection range from lowest concentration of $4.278 \pm 7.411 \text{ ng mL}^{-1}$ and the highest concentration recorded at $16.687 \pm 6.233 \text{ ng mL}^{-1}$ and the average concentration of progesterone is at $6.356 \pm 3.112 \text{ ng mL}^{-1}$. The highest detection of the progesterone was recorded in the effluent site sampling that indicates that the conventional treatment plant was not able to remove steroid sex hormone progesterone effectively and efficiently.

Conclusion: From that point of the study, monitoring on the progesterone presence and status should be done due to the presence of progesterone even in nanogram per milliliter in environment bring and posed a life threat towards the living organism in the environment.