

## Occurrence of Pharmaceutical Compounds in an Urban Lake

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**Abstract :** The main objectives of this research are to (1) assess the occurrence of the pharmaceutical compounds and (2) present the environmental challenges posed by the existence of these pharmaceutical compounds in the surface water. These pharmaceuticals were measured in Napindan Lake, Philippines. This lake is not only a major tributary of the Pasig River (an estuary) and Laguna Lake (freshwater). It also joins these two important surface waters of the National Capital Region. Pharmaceutical compounds such as Atenolol, Carbamazepine, and two other over the counter medicines: Cetirizine, and Ibuprofen were measured in Napindan Lake. Atenolol is a beta blocker that helps in lowering hypertension. Carbamazepine is an anticonvulsant used as treatment for epilepsy and neuropathic pain. Cetirizine is an antihistamine that can relieve allergies. Ibuprofen is a non-steroidal anti-inflammatory drug normally used to relieve pains. Three different climatological conditions with corresponding hydro physico chemical characteristics were considered. First, was during a dry season with a simultaneous dredging. Second was during a transition period from dry to wet season. Finally, the third was during a continuous wet event. Based from the results of the study, most of these pharmaceuticals can be found in Napindan Lake. This is a proof that these pharmaceutical compounds are being released to a natural surface water. Even though climatological conditions were different, concentrations of these pharmaceuticals can still be detected. This implies that there is an incessant supply of these pharmaceutical compounds in Napindan Lake. Chronic exposure to these compounds even at low concentrations can lead to possible environmental and health risks. Given this information and since consistent occurrence of these compounds can be expected, the main challenge, at present, is on how to control the sources of these pharmaceutical compounds. Primarily, there is a need to manage the disposal of the pharmaceutical compounds. Yet, the main question is how to? This study would like to present the challenges and institutional roles in helping manage the pharmaceutical disposals in a developing country like the Philippines.

**Keywords :** atenolol, carbamazepine, cetirizine, ibuprofen, institutional roles, Napindan lake, pharmaceutical compound disposal management, surface water, urban lake

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