

Cardiovascular and Respiratory Effect of 6PPD in *Daphnia magna*

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Project Summary

As road runoff continues to increase in urban areas, freshwater environments and the organisms that inhabit it are greatly impacted. With limited research in the emerging contaminant, 6PPD - an antioxidant found in tires - further directions should be taken. Through manipulation of the model organism, *Daphnia magna*, cardiovascular and respiratory effects of 6PPD will be investigated. The performance of an acute toxicity test at concentrations of parts per trillion over a 24- and 96-hour period will be compared to those from a chronic toxicity test over a 21-day period at lower concentration rates. The results will then be represented through LC50 curves. Cardiovascular assays will then be assessed, first through comparison of heart rate, then through comparison of hemoglobin concentrations. If such effects do not show a positive correlation with 6PPD, the effect of *D. magna*'s heart chamber may be taken into account using an ImageJ method. Lastly, through respirometry, oxygen consumption should then be measured after a 10-day exposure, expressing a relationship between physiological compensation. However, if a response is not generated, alternative methods pertaining to the activation of detoxification genes may be assessed. Further analysis of each assay will be represented both through the method, ANOVA and the demonstration of the importance of differences through Tukey post-hoc analyses.