

Discussion
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Discussion

This study is aimed to investigate and analyse the levels of wastewater before and after treatment in order to ensure that they are kept at a level that could not cause toxicity to not only aquatic life but also wildlife animals and humans. The data regarding the ratios of LAS in wastewater in Pittsburg is eminently squalid, and this formulates the foundation of the current research proposal. The study demonstrates that LAS was investigated to enlarge with increasing sonification over time. The research was conducted during the eight-week period. The shape of the LAS profiles has been received from the MBAS measurements on the samples taken from the Pittsburgh Wastewater Treatment Plant. The efficiency of a sonochemical reactor usage for the degradation from effluent of wastewater treatment plant and influent of wastewater treatment plant has been researched. In fact, there are a lot of ways in order to measure LAS in the wastewater, however, this study utilized Methylene Blue Active Substances (MBAS). They are selected to measure LAS in the Pittsburgh's Wastewater Treatment Plant. The Linear Alkyl Benzene sulfonates (LAS) in the aquatic environments can be established by a complex and consolidated gas-and-liquid chromatograph in reliance on the mass spectrometry.

It was investigated that there is a significant difference between Influent LAS and Effluent LAS. Previously, the degradation of commercial linear Alkyl Benzene Sulfonate products has been measured by dint of CAS simulation tests with the temperature ratios ranging from 9°C to 25°C. According to Rodezno (2004), the period of the naturalization benchmark was significantly distinct under discrepant temperature ratios (p. 7). It was investigated that the process involves longer timing in order to degrade under lower temperatures, and, vice versa, the degradation of commercial LAS is faster under higher temperatures. Nevertheless, the portion of linear Alkyl Benzene Sulfonate elimination that was investigated with the aid of HPLC and MBAS were investigated to be compared and superior (more than 95%) at all accounts

(Rodezno, 2004). In the case of this study, the Influent LAS and Effluent LAS have been tested in the temperatures ranging from 50 °F to 62 °F, which actually makes 10°C and 16.6°C respectively. The results demonstrate that the level of influent LAS was highly different in accordance to the temperature recorded with the lowest temperature recorded (50°F) at the level of 1.8 mg/l. The influent LAS depicted 3.3 mg/l as the final ratio (62 °F). As a matter of fact, the research confirmed that fluctuations are more apparent at a lower temperature, having a tendency to become more stable at higher temperature. Practically, the alterations of the influent LAS are quite volatile. As a matter of fact, the effluent LAS ratio constituted 0.4 mg/l at the lowest temperature recorded (50°F). The ratio of the effluent LAS ranged between 0.3 mg/l and 0.4 mg/l during the last indicators of the increasing temperature (meaning 60 °F, 61 °F and 62 °F). Therefore, it may be concluded that effluent LAS ratio may be evaluated as much more stable in comparison to influent LAS. The primary difference between influent LAS and effluent LAS constitutes 1.4 mg/l at the lowest temperature of 50 °F. The disparity between influent LAS and effluent LAS constitutes 3 mg/l at the highest temperature measured of 62 °F. Nevertheless, the discrepancies between the influent LAS and effluent LAS are eminently high and unstable in the measurements between the lowest and the highest temperature recorded within the period of eight weeks. In practice, it is highly important to research and analyze the differences between overall LAS levels and influent temperature. These findings allude that the microorganism community, which can also gain a genuine naturalization together with the fact that kinetics is also investigated to be fill under the low temperatures circumstances. The findings are consistent with conclusions of stream mesocosm studies conducted by Rodezno (2004), which suggest that under well-grounded environmental circumstance, surfactants mineralization can be asserted when distinctive algal species are naturalized along with the natural temperatures fluctuations.

Simultaneously, mineralization can often be elevated in the period of a notable reduction in seasonal temperature (Rodezno, 2004). Thus, the research demonstrated that degradation of linear Alkyl Benzene Sulfonate in water is extremely affected by temperature. Prats et al. (2006) investigated the influence of temperature on the demission of LAS by conducting experiments utilizing a 10 mg/L initial surfactant concentration and installing temperatures at 9, 15, and 25°C. The researchers investigated that the elimination of linear Alkyl Benzene Sulfonate outweighs 90%. Nevertheless, it was announced that microorganisms in water needed more timing for naturalization in lower temperatures (Prats et al., 2006). The results of the current research demonstrate that 85% of the parent LAS was no longer available in the solution. Hence, it may be concluded that co-products from degradation reactions, which could not be utilized as a carbon source by the microorganism explicated, conceived the abiding overall organic carbon concentration.

The results of the current study demonstrated that the pattern of the temperature fluctuation could not be studied without the reference to a variability in the LAS amount in the morning, afternoon, and night both during weekdays and weekends in the Pittsburgh's Wastewater Treatment Plant before and after treatment. The overall quantity of wastewater, which comes to the Wastewater Treatment Plant, diverges in regard with the time of the day, due to the fact that the current reaches the climax in the morning and presents the similar tendency in the night. Various industry activities also provoke disparity to both the amount and the virtue of the wastewater. The research evicted the increase of the LAS influent for Monday, with minor fluctuations observed during Tuesday, Wednesday, and Thursday, reaching its climax on Friday and lowering during Saturday, reaching the lowest point on Sunday. The ratios constituted 2.48mg/l of influent LAS on Sunday, extremely increasing to the point of 3.38 mg/l on Monday,

ranging between 3.38 mg/l and 3.58 mg/l during Tuesday, Wednesday and Thursday, noting the highest ratios of 3.58 mg/l on Friday. The results demonstrated the slight decrement to the point of 3.28 mg/l on Saturday, which was further decreasing by Sunday. On a contrary to the above-mentioned figures, the ratios of effluent LAS showed comparatively stable degree within the whole week, flaunting between 0.28 mg/l and 0.38 mg/l, reaching the highest level on Wednesday and Thursday. The primary lowering may be attributed by the fact that the level of industrial activity decreases and is suspended on the weekends with the ratio reaching the lowest position on Sunday. In addition, it is expounded due to the conditions of the daily water influents presence, which proceeds within Saturday and Sunday, while no additional operations are performed. The degree reaches the climax on Friday as the industrial activity is accumulated during the week, demonstrating the highest mark on the final day of the business week (OECD SIDS, 2005).

An essential discrepancy was noted between the degrees of influent LAS and effluent LAS within the measurement of time. In fact, the level of influent LAS constituent 2.78 mg/l (average) in the morning (10:00 AM), increasing to its climax of 3.78 mg/l in the afternoon (2:30 PM) and decreasing to the ration of 3.08 mg/l in the night (7:00 PM). The degrees may be expounded by the temperature elevations within the afternoon and the activity of the Wastewater Treatment Plant (OECD SIDS, 2005). On a contrary to the above-mentioned degrees, the level of the effluent LAS presented comparative stability, as the degree amounted 0.38 mg/l (average) within the whole day long. It actually evicts that upon LAS concentration alterations, the percentage of LAS elimination abided stable. Therefore, an increment in LAS influent levels became unquestionable.

References

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