

Review of: "[Review] Optimizing Wastewater Treatment Performance System and Achieving Greater Efficiency to Improve Water Quality for Sustainability — A Review"

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Potential competing interests: No potential competing interests to declare.

The title of the paper reads, "Optimizing wastewater treatment performance system and achieving greater efficiency to improve water quality for sustainability – A Review". However, no optimization procedure / methodology appears to have been discussed in the submitted manuscript. It simply presents a mundane review of mostly well-known treatment methods.

A lot of advances have taken place in the field of wastewater treatment and very little of them have been surveyed in the present manuscript. A few examples are,

- a. Several modifications (as many as 5 – 10) of activated sludge process (aerobic biological wastewater treatment) have been proposed by different authors. None of them discussed nor compared in this manuscript.
- b. Anaerobic treatment of wastewater has come a long way. Many promising innovations in bioreactor design in this connection have been developed and successfully implemented, such as UASB (Upflow Anaerobic Sludge Blanket) bioreactors, DSFF(Downflow stationary fixed film) bioreactors, Fluidized bed and Semifluidized bed biofilm reactors (both two phase and three phase), Inverse fluidized bed biofilm reactors (that employ nanoparticles as support particles for biofilm). None of them discussed, not even considered in the manuscript.
- c. Various types of synthetic / natural adsorbents have been developed and studied for effective removal of many contaminants from wastewater, particularly in the areas of dye removal, cyanide removal and arsenic removal. Comparative performance analysis of these adsorbents (specific surface, porosity, selectivity, means of regeneration and reuse) is painfully absent in the present study.
- d. Liquid membrane permeation (LMP) technology has been successfully employed for the economical removal / recovery of various constituents (which are otherwise contaminants) from industrial wastewater streams such as phenolics, dissolved metals (metallic compounds), dyes, and the like. This technology has not been touched at all.
- e. Optimization involves improved design of reactors / bioreactors, integration with supplementary systems such as membrane separation systems (nanofiltration, pressure retarded osmosis / reverse osmosis, microfiltration). No such discussion / analysis has been attempted by the authors.

Typical case studies reported in literature in this connection could also have been surveyed.

Overall, the present manuscript provides nothing more than a superficial survey on rudimentary wastewater treatment

processes and focuses little on any of the recent advances. Optimization is only mentioned in the title, no schemes outlined nor analysed in the manuscript.

In the present form therefore, the manuscript is unfit for publication, as it presents little novel information. The authors may be encouraged to reprepare the manuscript based on the above comments and re-submit for consideration for publication.