VIGOROX® WWT II - Wastewater Disinfection Technology

VIGOROX® WWT II PROVIDED A MORE STABLE DISINFECTION PERFORMANCE FOR A WASTEWATER PLANT IN CALIFORNIA

CASE STUDY

VIGOROX®

PLANT BACKGROUND

- Name of Plant: City of St. Helena (California)
- Type of Wastewater and Upstream Treatment Processes: Municipal wastewater with aerated lagoon and an average flow rate of 0.5 million gallons per day
- Current Disinfection Process: sodium hypochlorite for chlorination and sodium bisulfite for dechlorination

CHALLENGES

- Performance of existing chlorination process becomes less effective during some periods of summer and fall months:
    - The pH of the lagoon effluent increased to 8.0 or higher during these months due to excessive algae growth.
    - This pH change shifts the chemical equilibrium of hypochlorite solution added from hypochlorous acid
    - (HOCl) to hypochlorite ions (OCl).
    - Since HOCl is much more effective as a disinfectant than OCl, much higher doses of sodium hypochlorite are required at higher pH. Plant operating data indicated that the required hypochlorite dose was 14 mg/L at pH of less than 8.0 and increased to 40 mg/L or higher when pH is 8.0 or higher.
    - The city sought a cost effective technology that could provide more stable disinfection performance over a broad range of pH conditions and could easily retrofit the existing system.

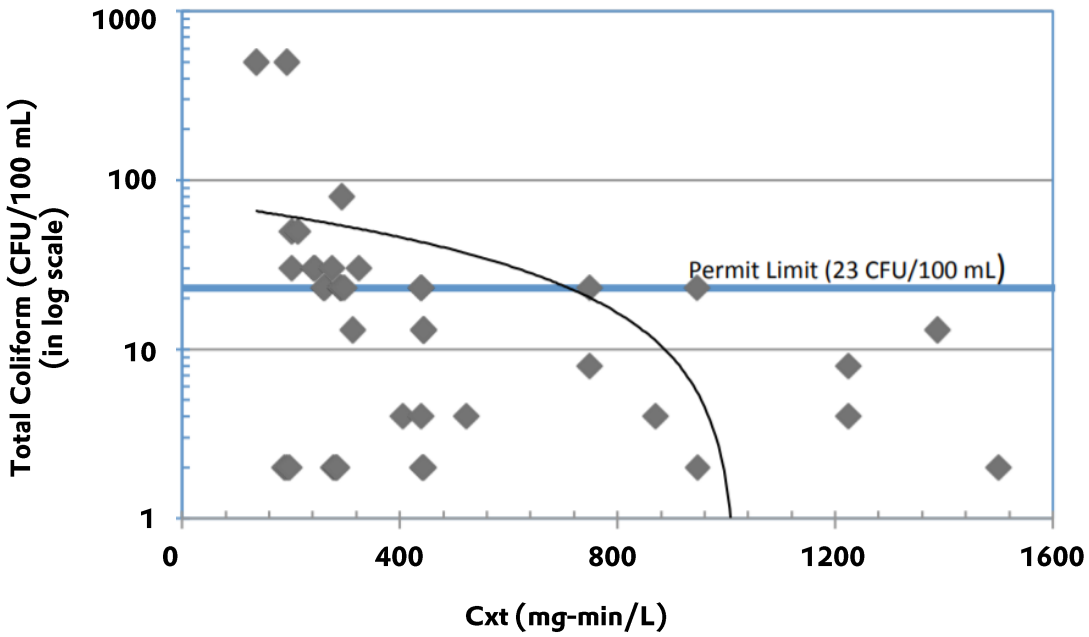
PROPOSED SOLUTION

- VIGOROX®® WWT II is desirable because of its stable and high disinfection efficiency over a broad range of pH and of its capability of retrofitting into existing treatment train, in addition to its other unique features (e.g., ease of operation and very low toxicity to aquatic organisms).
- Provided complete services and process evaluation, including on site bench scale tests and full-scale trial.

RESULTS & CONCLUSIONS

- The three-month full-scale test confirmed the effectiveness of VIGOROX® WWT II and narrowed down the operating conditions needed to achieve the disinfection goal.
- Specifically, with Ct values (C being the dose in mg/L and t being contact time in minutes) of 400 mgmin/L of higher, VIGOROX® WWT II is able to comply with the permit limit (see Figure 1).

Figure 1
Full Scale Test Results: Total Coliform Count of VIGOROX® WWT II Treated Effluent at different Ct Values
(C: dose in mg/L, t: contact time in minutes)



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