The purpose of this research was to study the efficiency of treatment process for wastewater from a rice noodle household factory by using a series of an anaerobic filters. The factors that affect efficiency such as influent COD loading rate of wastewater were also studied. The anaerobic upflow filter was composed of three beds in series and one final settling tank. Each bed was 80 centimeters in diameter and 2.0 meters in height, and filled with 1.20 meters of the plastic (polyethylene) media. The experiments were divided into 2 sections according to COD loading rate of wastewater. Section 1: influent COD loading rate of wastewater was between 0.74-1.50 $kg.COD/m^3$-d, 500 l/d flow rate, and 4 days retention time. Section 2: influent COD loading rate of wastewater was between 1.60-2.50 $kg.COD/m^3$-d, 1,000 l/d flow rate, and 2 days retention time.

The results show that the efficiency of COD removal were 95.37% and 96.04%, the efficiency of BOD removal were 95.89% and 96.70% and the efficiency of SS removal were 73.53% and 85.25% respectively. It was found that the efficiency of COD and BOD removal of both were more than 80% statistically significantly different. For the SS only the 2 nd section has removal efficiency more than 80% statistically significantly different. It was also found that there were no statistically significantly different COD and BOD removal efficiencies between low organic loading rate (0.74-1.50 $kg.COD/m^3$-d) and high organic loading rate (1.60-2.50 $kg.COD/m^3$-d), but SS removal efficiency was statistically significantly different.