

## ANAEROBIC/ AEROBIC TREATMENT OF PEACH CANNING WASTEWATER

**V.I. DIAMANTIS<sup>1</sup>, A. PARISIS<sup>2</sup> and A. AIVAZIDIS<sup>1</sup>**

<sup>1</sup> Laboratory for Wastewater Management and Treatment Technologies, Department of Environmental Engineering, Democritus University of Thrace, Xanthi, GR-671 00, Greece, <sup>2</sup> Association of Agricultural Cooperatives AL.M.ME Growers, P.O.Box 51, Kouloura, GR-591 00, Veria, Greece  
E-mail: [bdiamant@env.duth.gr](mailto:bdiamant@env.duth.gr)

### EXTENDED ABSTRACT

The fruit canning industry constitutes a seasonal operating facility. The annual campaign may last a few months but the quantity of wastewater generated can be significantly high. The wastewater originating from fruit canning operations is rich in organic compounds, both at soluble, colloidal and suspended form, which originate from the processed commodity.

Since most of water used in the fruit canning industry is not employed for consumptive use, wastewater management and treatment, prior disposal to natural receivers, is a prerequisite. The purpose of this paper is to discuss two main options for end-of-pipe biological wastewater treatment with emphasis on peach canning wastewater. For this case study the operational behavior of an industrial activated sludge reactor and a pilot-scale Upflow Anaerobic Sludge Bed (UASB) reactor are reported. The operation of these plants was accomplished in parallel during the peach canning campaign, which lasted 2 months.

The aerobic reactor was of the extended aeration type. The overall volume of the aeration tanks was 8400 m<sup>3</sup>. At hydraulic retention times between 30 – 70 h the reactor performed at Chemical Oxygen Demand (COD) removal efficiency greater than 95 %. The results of the industrial bioreactor indicate that the Organic Loading Rate (OLR) that can be effectively applied is between 1,0 – 3,0 kg/(m<sup>3</sup>d) and depends directly on the type of aeration.

The pilot-scale UASB reactor had an operational volume of 6,5 l and proved to be very effective in terms of COD removal for the examined peach canning wastewater. The results of the UASB do conform that that plant was capable to remove more than 80 % of the incoming COD load. The operational OLR ranged from 4,0 to 12,0 kg/(m<sup>3</sup>d) with no significant decline on plant efficiency. The UASB reactor is a system with low energy demands especially when the raw wastewater temperature is greater than 25 °C.

The wastewater generated from peach canning is easily biodegradable and can be effectively reclaimed both by aerobic and anaerobic processes. The combination of anaerobic and aerobic processes could result in complete water purification in addition to the energy recovery.

**Key words:** peach canning, pear canning, activated sludge, aerobic treatment, anaerobic treatment, UASB, food industry wastewater, fruit cannery