SCCWRP #0278

Extraction of Municipal Wastewater Effluent Using 90-mm C-18 Bonded Disks

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ABSTRACT

The effectiveness of solid phase extraction (SPE) using 90-mm Empore™ C-18 bonded disks and liquid-liquid extraction (LLE) was compared in extraction of municipal wastewater effluent, as well as distilled and sea water. Both SPE and LLE obtained similar recoveries of polycyclic aromatic hydrocarbons and polychlorinated biphenyls from spiked distilled water. Higher recoveries of chlori-nated pesticides were achieved from distilled water than from wastewater effluent by SPE. In addition, SPE yielded higher concentrations of PAHs and LABs from effluent samples than did LLE. Apparently, both SPE and LLE were affected by the presence of abundant dissolved organic carbon in wastewater effluent, but LLE suffered more losses. The condensed packing structure in C-18 disks might allow better extraction of hydrophobic organics from wastewater effluent. Alumina/silica gel clean-up after SPE was necessary to obtain acceptable quantitation results for wastewater effluent. SPE was technically as effective as LLE and superior to LLE, because it used less organic solvent and manpower. Usage of high-density glass beads with C-18 disks further improved the efficiency of SPE. Lowering the cost of C-18 disks will make disk SPE more appealing.

Key words: *SPE, LLE, C-18 bonded disk, hydrophobic organic compound, DOC*