# Performance of an activated sludge under periodic xenobiotic loadings

**黃文璽、張玉明**

E-mail: 9411630@mail.dyu.edu.tw

**ABSTRACT**

The activated sludge process is often used by environmental engineers for treating organic pollutants. If the target is a man-made organic matter that is persistent, the indigenous microorganisms need a stage of acclimation before they can display a degradation capability. In batch-mode reaction, the sludge and the target pollutant can be given sufficient contact time to complete an acclimation. On the other hand, in a continuous-flow reactor the sludge only has a time of about the mean-cell-residence-time ( θ c) to be in contact with the incoming substrate. This study was to perform continuous activated sludge experiments in which periodic loadings of a persistent xenobiotic 2,4-D were applied, after some down times during which a glucose feed was maintained. The results showed that: (1) when θ c is too short, 2,4-D degradation ability was insufficiency; (2) when an down time of 2,4-D loading is smaller than θ c, the sludge could still maintain the good 2,4-D degradation capability, which was improved by consecutive number of up time 2,4-D loadings; (3) when a down time was larger than θ c by far, the sludge ’ s degradation capability diminished as a result of its replacement by generations grown from the glucose feed.

Keywords : Activated Sludge ; persistent organics ; 2,4-D ; acclimation ; Biodegradation

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