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## Biodegradation of trichloroethylene in a 2-stage CSTR/TBF system

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Trichloroethylene (TCE) has become a widespread contaminant in air, soil, and underground water because of extensive industrial use and improper disposal. One of the promising TCE treatment methods is microbial degradation, in which monooxygenase transforms TCE to harmless end products *via* cometabolism. TCE, however, is not easily treated by simple biological degradation. This is mainly due to the competitive inhibition between primary substrate and TCE, together with toxicity of TCE to microbial cell and monooxygenase. In this study, we developed and operated a two-stage continuous stirred tank reactor (CSTR) / trickling biofilter (TBF) system for the long-term continuous treatment of gas-phase trichloroethylene (TCE) using *Burkholderia cepacia* G4. In this reactor system, CSTR with cell recycle from TBF was coupled to the TBF for the reactivation of the cells deactivated during TCE degradation. The effects of inlet TCE concentrations, gas flow rate, broth re-circulation rates on the efficiency of TCE biodegradation in the 2-stage CSTR/TBF system were investigated. The critical elimination capacity (EC) and maximum EC were determined to be 25.3 mg TCE/ $\ell$ ·day and 28.0, respectively. The reactor has been stably operated for more than 3 months, which clearly represented that CSTR/TBF system can be used for long-term treatment of industrial waste gas containing TCE.