Analytical solutions for analysing organic contaminant diffusion through a composite liner are presented in this paper. The degradation of organic contaminants in leachate and soil liner are both taken into account. The validity and accuracy of the proposed analytical solutions are verified by comparing with a numerical method. The mass flux and concentration of organic contaminants are calculated by the proposed solutions for zeroconcentration and zero-mass flux boundary condition at the base of composite liner, respectively. The calculated mass flux and concentration at the base of the composite liner decrease with the decrease of contaminant half-life in leachate and soil liner. It can be concluded from parametric studies that increasing the thickness or sorption capacity of the soil liner is effective to improve the performance of composite liner. The solutions can be used for preliminary design of composite liners, and verification of complicated numerical methods.