## Numerical simulation of dissolved oxygen, algal biomass, nitrate, organic nitrogen, ammonia and dissolved phosphorus in waste stabilization ponds

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Nowadays, throughout the world industrial communities have caused enormous difficulties for the inhabitants by an unsuitable way of using water, soil and energy sources. In this situation, water as a source of life is being used in different sections of civil life and is therefore an essential parameter to ensure our civilization. With most regret this natural source and precious gift is being vastly polluted by municipal, industrial and commercial waste. Therefore, selecting suitable methods for wastewater treatment is very important. Unfortunately most of these troubles are facing the developing countries that do not have enough financial support for the wastewater treatment. The best way for these communities which are generally located in a warm climate is through the use of waste stabilization ponds. Application of modeling techniques is a common way to avoid expensive and time-consuming experiments. In this paper, an implicit scheme known as backward time backward central space (BTBCS) was used to solve the advection-diffusion equations along the sources and sinks to predict the critical conditions. Various concentrations in the maturation pond were simulated, namely, dissolved oxygen, organic nitrogen, ammonia, nitrate, algae and phosphate. Results proved that the average accuracy of model outputs was more than 97%.

### Biography

Seyed Ahmad Mirbagheri has her expertise in water and wastewater treatment. He has completed his post-doctoral at 1982 from University of California Davis. He is currently professor of K. N. Toosi University of Technology.

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